EFFECTIVENESS OF MULTIFACTORIAL INTERVENTION PACKAGE (MIP) ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CARDIOVASCULAR DISEASE AMONG TEACHERS, AT SELECTED SCHOOLS, CHENNAI

DISSERTATION SUBMITTED TO

THE TAMIL NADU Dr.M.G.R. MEDICAL UNIVERSITY

CHENNAI

IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

OCTOBER 2015

Internal Examiner:

External Examiner:

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ACKNOWLEDGEMENT

"Gratitude is not only the greatest of virtues, but the parent of all the others."

Acknowledgement is an expression of gratitude for assistance in creating an original piece of work. This research work is a result of priceless help extended by several people. By keeping all their names in heart, I wish to thank the persons who have directly rendered their helping hands in completing my study, as "no duty is more urgent than that of returning thanks".

"The hardest arithmetic to master is that which enables us to count our blessings." I praise and thank the **Lord Almighty** for His loving care, tender mercies and the special graces He has bestowed upon me, for being my guide and guard during this research endeavour.

I express my sincere thanks to the **Vice Chancellor** and **Research Department** of **The Tamil Nadu Dr. M.G.R Medical University**, Guindy for giving me an opportunity to undertake my Postgraduate degree in Nursing at this esteemed university.

I wish to express my deep sense of gratitude to the **Managing Trustee**, Omayal Achi College of Nursing for having given me the opportunity to undergo the Postgraduate programme in this esteemed institution.

"A good teacher explains, a superior teacher demonstrates, the great teacher inspires." I express my deep sense of gratitude to **Dr. K.R.Rajanarayanan**, B.Sc., M.B.B.S., FRCH (London), Research Coordinator, International Centre for Collaborative Research (ICCR), Omayal Achi College of Nursing and Honorary Professor in Community Medicine, for his valuable suggestions and expert guidance with regard to approval and ethical clearance for conducting the study.

"Education is not filling a pail, but the lighting of fire." I express my sincere gratitude to **Dr.(Mrs).S.Kanchana,** Principal and Research Director, ICCR,

Omayal Achi College of Nursing for lighting the fire of research, her expert guidance, patience, valuable suggestions and encouragement throughout the study.

I express my humble gratitude to **Dr.(Mrs.) D.Celina**, Vice Principal, Omayal Achi College of Nursing, for her thought provoking and valuable advice, and inspiration throughout the study.

My heartfelt thanks to the **ICCR Executive Committee Members** for their suggestions during the Research proposal, Pilot study and Mock viva presentations.

My profound gratitude and earnest thanks to Professor **Mrs.Sumathi.M,** Head of the department, Medical Surgical Nursing, for her constant inspiration, valuable suggestions, encouragement, kind help, patience and motivation which made the completion of this dissertation a successful one.

I express my special and heartfelt thanks to my Research guide **Mrs.Sasikala S,** Assistant Professor for her expert guidance, constant inspiration, timely help, valuable suggestions and enduring patience which helped me in completing my study.

I express my earnest gratitude to **Mrs. Jose Eapen Jolly Cecily**, Professor, **Mrs.Grace Lydia,** Asst Professor**, Ms.Gipsy Sara Ninan,** Tutor and **Ms.Alice Dinah Margaret,** Tutor**,** of Medical Surgical Nursing Department, for their constant encouragement, scholarly suggestions and guidance throughout the study.

It's my immense pleasure to thank my Class Co-ordinators of both 1st and 2nd year of M.Sc. programme, **Mrs.Ruth Rani Princely, Mrs.Jayalakshmi, Mrs.Bhagavathy** and **Mrs.Manonmani,** for their timely guidance, constant support and inspiration that helped me to complete the study.

A special note of gratitude to **Mr.Yayathee Subbarayau,** Research fellow (ICMR), ICCR, Omayal Achi College of Nursing and all the **HODs** and **faculty** for their constructive ideas and moral support given towards the progress of the study.

I thank all the **Medical** and **Nursing experts** who contributed their time and efforts towards refining and validating the research tools used for the present study, my discussion with each of them was enlightening and beneficial.

I immensely thank the **Principals** of Sethu Bhaskara Matriculation Higher Secondary School, Pudur, Good Shepherd Matriculation Higher Secondary School, Pattabiram, Infant Matriculation School, Pattabiram, Immanuel Matriculation Higher Secondary School, Pattabiram and Ebenezer Matriculation Higher Secondary School, Korattur for granting me permission to conduct the study.

My heartfelt thanks to all the **teachers** who were willing to participate in the study and for their commendable co-operation in data collection and intervention process.

I extend my gratitude to the **Librarians** of Omayal Achi College of Nursing and The Tamil Nadu Dr. M.G.R Medical University, for their co-operation in collecting the related literature for this study.

I dedicate my warm and heartfelt thanks to **Mrs.A.Anuradha,** M.A., B.Ed., M.Phil., for editing the manuscript in English.

My sincere thanks to the **administrative staff** and all those who rendered their help and support for completing this dissertation.

I extend my sincere gratitude to **Mr.G.K.Venkataraman,** Elite Computers for typing, aligning and executing the manuscript.

I extend my deep sense of gratitude to my department friends **Ms.Bakya.M, Ms.Johanna Steffi Hepsibah.F, Ms.Sandra Jeba Malar.S, Ms.Sathya.M** for their timely help and support throughout the study period.

"A word of encouragement during a failure is worth more than an hour of praise after success." I heartfully thank all my **M.Sc Nursing classmates, Carnites (2013-2015 batch)**, my **peer evaluators Ms.K.J.Punithavathi** and **Ms.Sulu Susan Rajan** and

my seniors, Axios (2012-2014) for their constructive ideas, support, and encouragement, which helped me to mould this piece of work and complete this venture.

Words are beyond expression for the meticulous effort and love showered upon me by my beloved parents **Mr.Suresh Joseph and Mrs.Shiny Joseph,** my dear and loving sister **Ms. Sheba Roshan Joseph,** and all my loving **relatives** for their care, constant encouragement, moral support and prayers throughout the course.

I wish to thank all my **friends** and **well-wishers** for their unselfish love, support and prayers in every step of my life.

LIST OF ABBREVIATIONS

ANOVA	-	Analysis Of Variance
BP	-	Blood Pressure
BMI	-	Body Mass Index
CAD	-	Coronary Artery Disease
CCHS	-	Canadian Community Health Survey
CHD	-	Coronary Heart Disease
CHF	-	Congestive Heart Failure
CACS	-	Coronary Artery Calcium Score
CASHD	-	Coronary Atherosclerotic Heart Disease
CV	-	Cardiovascular
CVD	-	Cardiovascular Disease
CT	-	Computed Tomography
CI	-	Control Intervention
DALYs	-	Disability Adjusted Life Years
DM	-	Diabetes Mellitus
FH	-	Family History
ECG	-	Electrocardiogram
EMHSS	-	Ebenezer Matriculation Higher Secondary School
GDP	-	Gross Domestic Product
GSMHSS	-	Good Shepherd Matriculation Higher Secondary School
HR	-	Hazard Ratio
IMHSS	-	Immanuel Matriculation Higher Secondary School
IMS	-	Infant Matriculation School
HDL	-	High Density Lipoprotein
HIV/AIDS	-	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HTN	-	Hypertension
IHD	-	Ischemic Heart Disease
KAP	-	Knowledge, Attitude and Practice
LTPA	-	Leisure Time Physical Activity
LDL	-	Low Density Lipoprotein

LMIC	-	Low and Middle-income Countries
MACE	-	Major Adverse Cardiovascular Events
MA	-	Migraine with Aura
MVPA	-	Moderate-Vigorous Physical Activity
MIP	-	Multifactorial Intervention Package
MI	-	Myocardial Infarction
NPCDCS	-	National Programme for Prevention and Control of Cancer, Diabetes, CVDs and Stroke
NCD	-	Non-communicable Disease
OPA	-	Occupational Physical Activity
PA	-	Physical Activity
PVD	-	Peripheral vascular disease
PYLL	-	Years of Productive Life
RR	-	Relative Risk
RSA	-	Religion Service Attendance
SF	-	Saturated Fat
SB	-	Sedentary Behaviour
SBMHSS	-	Sethu Bhaskara Matriculation Higher Secondary School
SES	-	Socio-economic Status
SI	-	Special Intervention
SD	-	Standard Deviation
SCH	-	Subclinical Hypothyroidism
TSH	-	Thyroid-Stimulating Hormone
TC	-	Total Cholesterol
TV	-	Television
US	-	United States
WHO	-	World Health Organization
WHR	-	Waist-Hip ratio

LIST OF SYMBOLS

χ^2	-	Chi square
=	-	Equals To
<	-	Less than
>	-	More than
%	-	Percentage
+/-	-	Plus or minus

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Abstract

Effectiveness of Multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers, at selected schools, Chennai.

Aim and objective: To assess the effectiveness of Multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers. **Methodology:** A quasi-experimental pre and post test control group design was used to conduct the study at selected schools, Chennai. 120 teachers who satisfied the inclusion criteria were selected using purposive sampling technique. **Result:** The comparison of post test level of knowledge between experimental and control group, gave a calculated unpaired 't' of 19.24 which showed high statistical significance at $p<0.001$ level. The comparison of post test level of risk perception between experimental and control group, gave a calculated unpaired 't' of 12.37 which showed high statistical significance at $p<0.001$ level. The comparison of post test level of readiness to change lifestyle behaviour revealed a calculated unpaired 't' value of 17.98 which showed high statistical significance at $p<0.001$ level. The analysis of correlation coefficient between knowledge, risk perception and readiness to change lifestyle behaviour in experimental group using Karl Pearson correlation revealed 'r' value of 0.310,0.314 and 0.270 respectively which showed a positive correlation at $p<0.05$ level regarding the prevention of CVD whereas in the control group, the Karl Pearson Correlation value of 'r'= 0.145, r=-0.107 and r=0.157 revealed a positive and negative correlation between knowledge, risk perception and readiness to change lifestyle behaviour and was not found to be statistically significant. A significant level of association was identified between the demographic variables, frequency of consumption of junk foods and level of knowledge, religion and risk perception and marital status and family history of cardiovascular disease with readiness to change lifestyle behaviour in the experimental group. ***Conclusion:*** Hence the Multifactorial intervention package developed by the investigator proved to be an effective aid in providing insight regarding prevention of cardiovascular disease.

Keywords: *Multifactorial intervention package, knowledge, risk perception and readiness to change lifestyle behaviour, prevention of Cardiovascular Disease.*

INTRODUCTION

Cardiovascular disease (**CVD**) is a collective term for diseases of the heart and blood vessels. Many of these diseases are called "lifestyle diseases" because they develop over time and are related to a person's exercise habits, diet, whether they smoke, and other lifestyle choices a person makes. It is a major cause of disability and premature death throughout the world. Acute coronary events (heart attacks) and cerebrovascular events (strokes) frequently occur suddenly, and are often fatal before medical care can be given. Risk factor modification can reduce clinical events and premature death in people with established CVD as well as in those who are at high cardiovascular risk due to one or more risk factors.

It is estimated that 90% of CVD is preventable. Prevention of atherosclerosis is by decreasing risk factors through: healthy eating, exercise, avoidance of tobacco smoke and limiting alcohol intake.

Objective

To assess the effectiveness of Multifactorial intervention package (MIP) on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers, at selected schools, Chennai.

Null Hypotheses

NH_1: There is no significant effect of Multifactorial Intervention Package on the level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers.

METHODOLOGY

A quasi experimental, non-equivalent, pretest and post test with control group design was used to conduct this study with the setting for the experimental group at Sethu Bhaskara Matriculation Higher Secondary School, Pudur, Good Shepherd Matriculation Higher Secondary School, Pattabiram which employs over 30-100 teachers. The setting for control group was Infant Matriculation School, Pattabiram, Immanuel Matriculation Higher Secondary School, Pattabiram and Ebenezer Matriculation Higher Secondary School, Korattur which employs over 30-80 teachers. Totally 120 teachers, who satisfied the inclusion criteria, were selected as samples for the study using purposive sampling technique.

The risk for CVD was assessed using Modified Framingham risk assessment tool and pre test was conducted. The demographic variables and level of knowledge regarding CVD was collected using structured questionnaires, risk perception and readiness to change lifestyle behaviour was assessed by using 4 point likert risk perception scale and 5 point likert readiness to change lifestyle behaviour scale respectively. The interventional tool prepared by the investigator (MIP), consisted of set of interventions, administered to teachers, in order to influence a positive change in their level of knowledge, risk perception and lifestyle behavior regarding prevention of CVD.

On completion of the pre test, a booklet containing information regarding the strategies to prevent CVD was given to the teachers for reinforcing the MIP in experimental group and as an aid for continued practice. The post test was conducted on the seventh day after which the MIP was administered for the control group.

RESULTS & DISCUSSION

The present study aimed to assess the effectiveness of MIP on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers.

The level of risk assessment among teachers using modified Framingham risk assessment tool revealed that 35 (58.33%) had low risk, 20(33.33%) had moderate risk and 5(8.33%) had high risk of developing CVD in both experimental group and control group.

The comparison of post test level of knowledge between the experimental and control group revealed that the post test mean score of knowledge was 15.50 with SD 1.62 and for the control group, post test mean score of knowledge was 8.51 with SD 2.29. The calculated unpaired “t” value of 19.24 showed high statistical significance at $p< 0.001$ level.

The comparison of post test level of risk perception between the experimental and control group revealed that the post test mean score of risk perception was 33.18 with SD 3.05 and for the control group, post test mean score of knowledge was 25.41 with SD 3.78. The calculated unpaired “t” value of 12.37 showed high statistical significance at $p< 0.001$ level.

Post test mean scores of readiness to change lifestyle behaviour 40.933 with S.D 4.02 of the experimental group, when compared with the post test mean scores of readiness to change lifestyle behaviour in control group, 29.13 with S.D of 3.10, revealed the calculated unpaired ’t’ test value of 17.980 which showed high statistical significance at $p< 0.001$.

The analysis of correlation coefficient between knowledge, risk perception and readiness to change lifestyle behaviour in experimental group using Karl Pearson correlation revealed 'r' value of 0.310, 0.314 and 0.270 respectively which showed a positive correlation and it had low statistical significance at $p<0.05$ level regarding prevention of CVD whereas in the control group, the Karl Pearson Correlation value of 'r'= 0.145, r=-0.107 and r=0.157 revealed a positive and negative correlation between knowledge, risk perception and readiness to change lifestyle behaviour and was not found to be statistically significant.

With regard to association of demographic variables like frequency of consumption of junk foods and level of knowledge, religion and risk perception and marital status and family history of cardiovascular disease with readiness to change lifestyle behaviour showed statistical significance at $p<0.01$ level and $p<0.05$ level respectively in the experimental group. No statistically significant association was observed between other selected demographic variables and mean differed score of knowledge, risk perception and readiness to change lifestyle behaviour in the control group.

The study findings revealed that MIP was effective in assessing risk for developing CVD, creating awareness about CVD risk factors and influencing risk perception and positive behaviour. The booklet developed by the investigator proved to be an effective aid in providing insight on the prevention of CVD.

IMPLICATIONS

Nurses play a vital role in educating the teachers and to improve their knowledge, risk perception and readiness to change lifestyle behaviour in relation to prevention of CVD. The nurse educator should be competent enough to train her students to assess the existing risk factors of CVD and administer preventive measures and must educate the client and significant others on the prevention of CVD, as to bring about a desirable change in lifestyle behaviour. Nurse administrators can plan and implement a protocol for nurses to aid in enhancing the knowledge in prevention of CVD among at risk clients as a part of routine hospital care and they are in prime position to make use of many opportunities to encourage and influence patients and the public to be involved in their own health and make use of the screening programmes available.

CHAPTER 1

INTRODUCTION

INTRODUCTION

Non-communicable disease (NCD) is a medical condition or disease that is non-infectious or non-transmissible. They refer to chronic diseases which last for long periods of time and progress slowly. Sometimes, they result in rapid deaths as seen in certain diseases such as autoimmune diseases, heart diseases, stroke, cancers, diabetes, chronic kidney disease, osteoporosis, Alzheimer's disease, cataracts, and others. While sometimes (incorrectly) referred to as synonymous with "chronic diseases". Chronic diseases require chronic care management as do all diseases that are slow to develop and of long duration.

Cardiovascular disease (CVD) is a collective term for diseases of the heart and blood vessels. Many of these diseases are called "lifestyle diseases" because they develop over time and are related to a person's exercise habits, diet, whether they smoke, and other lifestyle choices a person makes. Atherosclerosis is the precursor to many of these diseases. It is where small atheromatous plaques build up in the walls of medium and large arteries. This may eventually grow or rupture to occlude the arteries. It develops over many years and is usually advanced by the time symptoms occur, generally in middle age.

The common cardiovascular diseases are hypertension (HTN), Coronary Artery disease (CAD), Myocardial infarction (MI), heart failure, arrhythmias, valvular diseases and Peripheral Vascular Diseases (PVD).

CVD is a major cause of disability and premature death throughout the world. Acute coronary events (heart attacks) and cerebrovascular events (strokes) frequently occur suddenly, and are often fatal before medical care can be given. Risk factor modification can reduce clinical events and premature death in people with established cardiovascular disease as well as in those who are at high cardiovascular risk due to one or more risk factors.

It is estimated that 90% of CVD is preventable. Prevention of atherosclerosis is by decreasing risk factors through: healthy eating, regular exercise, avoidance of tobacco smoke and limiting alcohol intake.

1.1 BACKGROUND OF THE STUDY

Around 38 million deaths occur due to NCDs each year. Almost three quarters of NCD deaths (28 million) occur in low and middle-income countries (LMIC). 16 million deaths occur before the age of 70; 82% of these "premature" deaths occurred in LMIC. CVDs account for most NCD deaths, or 17.5 million people annually, followed by cancers (8.2 million), respiratory diseases (4 million), and diabetes mellitus (DM) (1.5 million).These 4 groups of diseases account for 82% of all NCD deaths. Tobacco use, physical inactivity, harmful use of alcohol and unhealthy diets all increase the risk of dying from NCD. Of these CVDs rank the highest. **(World Health Organization (WHO), 2012)**

Table 1.1.1 World top 10 causes of mortality among general population

2008	2030
Cardiovascular diseases	Cardiovascular diseases
Cancers	Cancers
Chronic respiratory diseases	Chronic respiratory diseases
Respiratory infections	Respiratory infections
Perinatal conditions	Diabetes Mellitus
Diaarhoeal diseases	Digestive diseases
Digestive diseases	Perinatal conditions
HIV/AIDS	Neuropsychiatric disorders
Tuberculosis	Genitourinary diseases
Neuropsychiatric disorders	HIV/AIDS

[Source: International Heart Protection Summit, 2011]

Among CVDs, 82% of the mortality burden is caused by ischaemic or coronary heart disease (IHD) or (CHD), stroke (both hemorrhagic and ischaemic), congestive heart failure (CHF). Over the past decade, CVD has become the single largest cause of death worldwide, representing nearly 30% of all deaths and about 50% of NCD deaths.

In 2008, CVD caused an estimated 17 million deaths and led to 151 million Disability Adjusted Life Years (representing 10% of all DALYs in that year). Behavioural risk factors such as physical inactivity, tobacco use and unhealthy diet explain nearly 80% of the CVD burden **(World Economic Forum, 2011).**

In 2008, more than 3 million of deaths occurred before the age of 60 and could have largely been prevented. The percentage of premature deaths from CVDs ranges from 4% in high-income countries to 42% in low-income countries, leading to growing inequalities in the occurrence and outcome of CVDs between countries and populations. There are also new dimensions to this alarming situation. Over the past two decades, deaths from CVDs have been declining in high-income countries, but have increased at an astonishingly fast rate in LMIC. **(Global Atlas on cardiovascular disease prevention and control, WHO, 2011)**

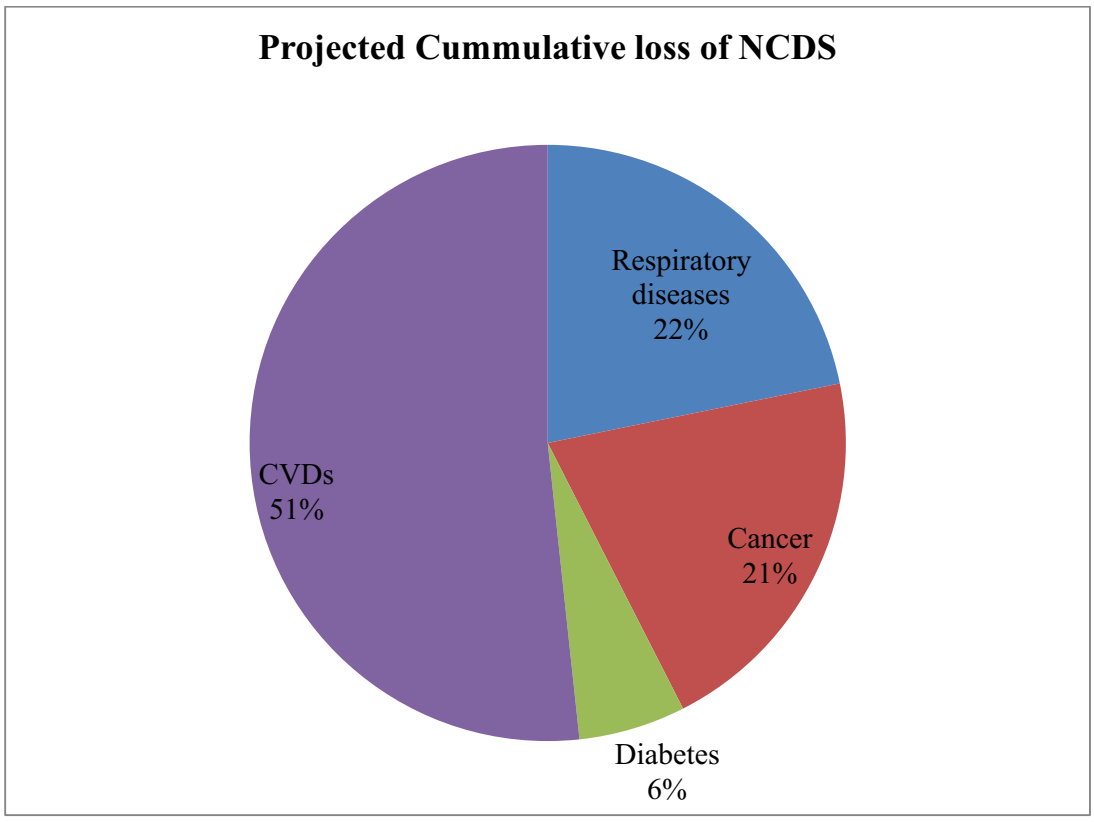


Figure 1.1.1 Projected Cumulative loss of NCDs from 2011 to 2025
[Source: Journal of the American college of Cardiology, 2012]

Table 1.1.2 Forecasting the number of cases (males and females) of CHD in India

Year/ Area	20-29yrs	30-39 yrs	40-49 yrs	50-59 yrs	60-69 yrs	TOTAL
2010						
Urban	5,992,412	5,154,766	5,606,731	4,223,273	3,710,938	24,688,119
Rural	2,324,772	3,940,722	5,367,797	5,817,363	4,829,922	22,280,577
Total	8,317,184	9,095,489	10,974,527	10,040,636	8,540,860	46,968,695
2015						
Urban	8,167,924	7,927,846	8,493,463	6,156,089	5,346,975	36,092,297
Rural	2,324,087	4,523,697	5,816,588	6,852,050	5,913,624	25,430,046
Total	10,492,011	12,451,542	14,310,051	13,008,140	11,260,599	61,522,343

[Source: International Journal of Scientific and Research Publications, 2013]

CVDs account for around one fourth of all deaths in India in 2008. CVDs are expected to be the fastest growing chronic illness by 2015 growing at 9.2% annually from 2000 onwards. A more worrying fact is that the incidence has gone up significantly for people between ages 25-69 to 24.8%. The downward escalation of CVDs is of primary concern as it is affecting the productive population of India. The present evidence suggests an average mortality of 4% in the age group of 20-49 years and 6% in those above 50 years due to CVD. This may remain the same till 2015 if the current situation continues for the next 10-15 years **(Shraddha and Bani, 2013).**

WHO reports that the current age standardised CVD mortality rates among males and females in India (per 100,000) are 363-443 and 181-281 respectively **(Global Atlas on cardiovascular disease prevention and control, WHO, 2011).**

Table 1.1.3 Estimates of total years of life lost due to CVD in 2000 and 2030

Country	2000		2030	
	Total years of life lost	Rate per 100,000	Total years of life lost	Rate per 100,000
India	9,221,165	3,572	17,937,070	3,070
Brazil	1,060,840	2,121	1,741,620	1,957
China	6,666,990	1,595	10,460,030	1,863

[Source: International Journal of Scientific and Research Publications, 2013]

Between 2005 and 2015, India is projected to cumulatively lose US dollars 236.6 billion because of heart disease, stroke, and diabetes, shaving 1% off the Gross Domestic Product (GDP). In 2000, in the age group of 35 to 64, India lost 9.2 million years of productive life (PYLLs), almost six times the figure for US. **(International Heart Protection Summit, 2011)**

The mortality rate due to CVDs in Tamil Nadu was 360-430 per 1 lakh population, the highest in the country. Quoting statistics, 10.4% of population in the State suffer from DM, 20% from high blood pressure (BP) and 23% were overweight. **(The Hindu, 2013)**

Tamil Nadu has the highest crude mortality rates due to CVDs in India, with approximately 360-430 deaths per 100,000 people per year, an approximate 36% prevalence rate. It also reports a 24% mortality rate due to CVDs in rural Tamil Nadu. **(Centre for technologies in public health, 2011)**

The prevalence of CAD in the Chennai Urban Population Study was 11% in the total population, with 1.2% patients with MI, 1.3% with Q-wave changes, 1.5% with ST-segment changes, and 7.0% with T-wave abnormalities. This 11% represents a 10-fold increase in CAD prevalence in urban India since 1970, now approaching those reported in migrant Indians. **(Viswanathan et al, 2010)**

Heart disease results due to two main types of risk factors namely non-modifiable and modifiable risk factors. The non-modifiable risk factors are advancing age, gender differences, heredity/ family history, history of preeclampsia and modifiable factors include smoking, dyslipidemia, DM, obesity, sedentary lifestyle, stress and alcohol consumption.

Table 1.1.4 Sex/Gender Differences in the Burden of CVD

Burden of CVD	Men	Women
Remaining lifetime risk for CVD at age 40 years	2 in 3	1 in 2
Age-adjusted CVD death rate per 100,000	300.3	211.6
Hospital discharges for CVD	3,016,000	2,874,000

[Source: American Heart Association]

1.2 SIGNIFICANCE AND NEED FOR THE STUDY

Centre for disease control and prevention, 2015, reported that heart disease is the leading cause of death for both men and women. More than half of the deaths due to heart disease in 2009 were in men. CHD is the most common type of heart disease, killing more than 370,000 people annually and costs the US $108.9 billion each year. The number of hospital visits for heart disease, excluding ischemic, as primary diagnosis 1.9 million.

The WHO Programme on CVD works on prevention, management and monitoring of CVD globally. It aims to develop global strategies to reduce the incidence, morbidity and mortality of CVD by effectively reducing CVD risk factors and their determinants, developing cost effective and equitable health care innovations for management of CVD, monitoring trends of CVD and their risk factors.

The Indian Government has started taking measures towards prevention of heart diseases especially among the rural population (2011)

- National Programme for Prevention and Control of Cancer, Diabetes, CVDs and Stroke (NPCDCS) was introduced in July 2010 with an outlay of 500 crores for interventions on diabetes and CVDs and stroke (out of the total outlay of Rs.1231 crores). The programme aims to achieve behaviour change in the community and improve access to cardiac care through:
  - Massive health education and mass media efforts at country level.
  - Opportunistic screening of persons above the age of 30 years.
  - Establishment of NCD clinics at Community Health Centre and district level.
  - Development of trained manpower and strengthening of tertiary level health facilities.
  - Early diagnosis and treatment.
- In addition there are initiatives to include preventive healthcare check-ups under Central Government Health Scheme, mass screening camps for early detection amongst slum dwellers, and screening of children for congenital heart disease **(International Heart Protection Summit, 2011)**

Azza Greiw H, Ahmed Mandil, Mervat Wagdi, Ali Elneihoum (2010) conducted a cross sectional study to estimate the magnitude of 2 major CVDs (HTN, IHD) among 1200 teachers by multistage random sampling technique at different schools in Benghazi, Libya. Data collection tool included a self administered questionnaire, a standardized rose CVD interview questionnaire and a form for anthropometric measurements, BP, clinical examination, lab findings and electrocardiogram (ECG) tracings. The prevalence of HTN and IHD were 15.1% and 2.7% respectively. The study concluded that there is a rapid need for intensive health education.

Familoni I F and Familoni O B (2011) conducted a quasi-experimental study to investigate the knowledge of cardiovascular (CV) risk factors among 358 secondary school teachers in Oyo state, Nigeria with the help of a questionnaire and with 215 civil servants as controls. Findings showed that the knowledge level was inadequate and the qualification in pure science did not radically affect this knowledge. The study concluded that knowledge base of the teachers needs to be improved.

Haidinger T et al (2012) conducted a cross sectional study to assess individual CVD risk factor awareness, preventive action taken and the barriers to CV health among 573 women and 336 men who were randomly chosen to complete an anonymous questionnaire in Austria. The results showed that knowledge about risk factors for CVD needs to be improved in both sexes. However great effort is needed to inform men, compared with women, about the various ways to prevent CVD and to motivate them to preventive action.

Joby Francis, Josmi Jose, Joyse Sunny K, Juvairiya U S and Sanil Varghese (2014) conducted a community based descriptive study to assess the existing knowledge regarding CV risk factors. Non probability convenient sampling and pre-validated semi-structured questionnaire was used.100 community people were surveyed. Findings showed 98% had average level of knowledge regarding CV risk factors. There was a significant association between knowledge and age and knowledge and education. Hence it is necessary to educate the people in community regarding CV risk factors.

Uchenna D I , **Ambakederemo T E** , **Jesuorobo D E(2012)** conducted a cross sectional study to assess the knowledge of heart disease and its prevention among 236

patients attending an outpatient clinic in southern Nigeria by random selection and a structured questionnaire was administered. Findings showed that there was no significant difference between level of education and gender with awareness of heart disease and its prevention. This study concluded that education on disease and lifestyle modification is necessary.

Jerilyn Allen K, Alison Purcell, Sarah Szanton, and Cheryl Dennison R (2010) conducted a cross sectional study to determine the CVD risk perception among 143 patients with DM of low socioeconomic status (SES) enrolled at urban community clinics in Baltimore, Maryland. Demographic and socioeconomic variables, medical history, health behaviour and depressive symptoms were measured. Findings revealed 75% perceived that they had a 50% or smaller risk of developing CVD. The study concluded that comprehensive care for urban, poor, diabetic patients calls for effective communication of CVD risk and its risk factors.

Liesbeth Claassen et al (2011) conducted an exploratory study to examine perceived disease risk and causal beliefs for CVD among 255 people who were at increased risk for CVD (aged 57-79 y) in Netherlands by a postal questionnaire. Findings revealed associations between risk factors and perceived CVD risk were weak. The study concluded that to improve risk perception, health professionals need to educate about how personal risk factors can contribute to development of CVD.

Jibril Mohammed (2012) conducted a cross-sectional study to assess the knowledge and attitude to CVD risk factors among 82 members (30-60 years) of the Nigerian armed forces. A structured questionnaire was administered. The study indicated that majority had an impressive knowledge of CVD risk factors. However, their attitude was poor.

Elizebeth Baby and Sams Larissa Martha (2015) conducted a descriptive survey to determine the knowledge regarding CAD among 75 patients in Mangalore who were selected by purposive sampling technique. Data was collected by administering the CAD questionnaire. Findings revealed that there was a significant relationship between knowledge and age, occupation and education but no significant relationship between

knowledge and religion. The study concluded that patients have moderate level of knowledge regarding CAD.

The investigator had encountered with clients who had CVD and understood the alarming rise of CVD in India and the lack of knowledge among the general public and felt the need for awareness regarding CVD and its prevention strategies. Though teachers are themselves experts at teaching, studies show that they are at high risk for developing CVD because of their sedentary lifestyle and other risk factors that make them prone to develop CVD. Hence the investigator felt the need to assess the existing level of risk among teachers and create awareness among them and they in turn can impart this acquired knowledge to their students which in turn can create an impact on the general population when these teachers feel the necessity to spread information about CVD to their own students, since they are the pillars of our nation.

1.3 STATEMENT OF THE PROBLEM

A quasi experimental study to assess the effectiveness of multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai.

1.4 OBJECTIVES

1. To assess the existing level of risk for developing CVD.
2. To assess the pretest & post test level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among experimental & control group.
3. To determine the effectiveness of Multifactorial Intervention Package (MIP) on level of knowledge, risk perception and readiness to change lifestyle behaviour among teachers at risk for CVD in experimental and control group.
4. To correlate the post test level of knowledge score, risk perception score and readiness to change lifestyle behaviour score among experimental and control group.
5. To associate the selected demographic variables with mean differed level of knowledge, risk perception and readiness to change lifestyle behaviour among experimental and control group regarding prevention of CVD.

1.5 OPERATIONAL DEFINITIONS

1.5.1 Effectiveness

It refers to the outcome of Multifactorial Intervention Package, assessed in terms of change in level of knowledge, risk perception and lifestyle behaviour in prevention of Cardiovascular Disease measured by using a structured knowledge questionnaire, 4 point likert risk perception scale and 5 point likert readiness to change lifestyle behaviour scale respectively.

1.5.2 Multifactorial Intervention Package (MIP)

It refers to a specific teaching programme structured by the Investigator to bring about a change in the level of knowledge, risk perception and lifestyle behaviour regarding prevention of Cardiovascular Disease among teachers through:

- A power point presentation that transfers information in the form of lecture cum discussion on definition of selected Cardiovascular Diseases (Hypertension, Heart failure, Coronary Artery Disease, Myocardial Infarction, Peripheral Vascular Disease) causes, risk factors, manifestations, possible complications and preventive measures such as regular aerobic exercises, cessation of smoking and alcohol, restriction of fat, salt and sugar intake and stress management.
- Video show on “Heart Healthy Exercises” which includes stretching exercises, warm up exercises, cardio work out and brisk walking.
- Information booklet for reinforcement on prevention of CVD which consists of definition, causes, risk factors, manifestations, possible complications and preventive measures.
- The total duration of the intervention is about 45min.

1.5.3 Knowledge

It refers to the level of awareness regarding the risk factors of Cardiovascular Disease assessed by using a structured knowledge questionnaire.

1.5.4 Risk Perception

It refers to a belief or subjective thinking about the chance of developing Cardiovascular Disease by the teacher which will be assessed by using a 4 point likert risk perception scale.

1.5.5 Readiness to change lifestyle behaviour

It refers to the level of preparedness of the teacher to accept "at risk" status & refrain from lifestyle behaviour (nutrition and personal habits) which may increase risk for Cardiovascular Disease, which will be assessed using a 5 point likert readiness to change lifestyle behaviour scale.

1.5.6 Prevention of Cardiovascular Disease (CVD)

It refers to the action taken by the teachers prior to the onset of disease, which removes the possibility that Cardiovascular Disease will ever occur.

1.5.7 Teachers

It refers to male and female teachers aged above 25 years who are at risk for Cardiovascular Disease based on modified Framingham risk assessment tool.

1.6 ASSUMPTIONS

1. Teachers may have some level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD.
2. Multifactorial intervention package may enhance their level of knowledge, risk perception and also influence the readiness to change lifestyle behaviour regarding prevention of CVD.

1.7 NULL HYPOTHESES

NH_1: There is no significant effect of Multifactorial intervention package on the level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD between experimental and control group at $p < 0.05$ level.

NH_2: There is no significant relationship of the post test level of knowledge, risk perception and readiness to change lifestyle behaviour score among experimental & control group at $p < 0.05$ level.

NH_3: There is no significant association of selected demographic variables with the mean differed knowledge score, risk perception score and readiness to change lifestyle behaviour score regarding prevention of CVD in the experimental & control group at $p < 0.05$ level.

1.8 DELIMITATIONS

The study is delimited to a period of four weeks.

1.9 CONCEPTUAL FRAMEWORK

A conceptual framework or model is the concepts of mental images of the phenomenon. These concepts are linked together to express their relationship between them. The conceptual framework provides the investigator the guidelines to proceed in attaining the objectives of the study.

Conceptual framework adopted is based on integrated **Wiedenbach's Helping Art of Clinical Nursing Theory** and **J.W.Kenny's Open System Model.**

Wiedenbachs Helping Art of Clinical Nursing Theory was given by **Ernestine Wiedenbach**. He views this theory as a set of interrelated concepts that gives systematic view of a phenomenon that is explanatory and predictive in nature. The present study is aimed at helping the teachers to develop adequate knowledge, risk perception readiness to change lifestyle behaviour and skill regarding prevention of CVD.

In 1968, **Ludwig Bertanlanffy** developed a general system model approach, which was modified and put into practice as the open system model by J.W. Kenny in 1999. The open system model enumerates various aspects of system and interaction. The open system continuously interacts with environment. The interaction takes form of information transfer into or out of the system boundary, depending on the discipline which defines the concept. Open system model is useful in breaking the whole process into sequential tasks to ensure goal realization. The three major aspects of the system are:

1. Input
2. Throughput
3. Output

The investigator applied J.W. Kenny's open system model in order to assess the knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD.

The concepts according to the study:

Input: Identifying the need for help

According to J.W. Kenny, input is a type of information and material and enters the systems from environment through its boundaries. In this study it refers to the demographic variables of teachers such as age, gender, educational qualification, marital status, type of family, family monthly income, religion. These are assessed by using a structured questionnaire.

According to Ernestine Weidenbach, identifying the need for help, the nurse perceives the patient as an individual with unique experiences and understanding the patient's perception of the condition and determines patient's need for help based on the existence of a need, whether the patient realizes the need, what prevents the patients from meeting the need and whether the patient cannot meet the need alone.

In identifying the need there are two components:

1. **General information**

   This comprises of collecting the information to identify the need. In this study the investigator assessed the general information which includes family history of CVD, nature of relationship with affected member, personal history of preeclampsia and diabetes mellitus (DM), chronicity of DM, type of treatment, comorbid illness, medications, Body Mass Index (BMI), habit of eating junk or fried foods, habit of doing exercise and assessment of existing level of risk of developing CVD.

2. **Central purpose**

   The central purpose refers to what the investigator wants to accomplish. In this study it refers to the assessment of effectiveness of multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour among teachers.

Throughput: **Ministering the Need for Help**

Throughput is the process that occurs at some point between input and output process. In this study throughput refers to transformation of information in form of multifactorial intervention package.

In ministering the need for help, the nurse investigator formulates a plan for meeting the teacher's need for help based on available resources, the components are:

a) Prescription

It refers to the plan of care the nature of action that will fulfil the central purpose. In this study the investigator planned and prepared the multifactorial intervention package regarding prevention of CVD. In experimental group it will be given on the first day after the pre test and in the control group on the last day after post test.

b) Ministering

It refers to the information transfer given by the investigator to the teacher. In this study the investigator administered the multifactorial intervention package regarding prevention of CVD which includes information transfer in the form of lecture cum discussion with the aid of a power point presentation, video show on heart healthy exercises and reinforcement on prevention of CVD through a booklet.

c) Realities

The realities are the immediate situation that influences the fulfillment of the central purpose. The nurse investigator should consider the realities of the situation in which she has to provide care. Wiedenbach defines the realities as:

1. Agent

The agent is the participating nurse who has the personal attributes, capabilities, commitment and competence to provide nursing care. In this study the agent is the nurse investigator.

2. Recipient

The recipient is the patient who has personal attributes, problems, capabilities, aspirations and ability to cope. In the study the recipient are the teachers who are at risk of developing CVD.

3. The goal

The goal is the nurse's desired outcome, it directs action and suggests the reason for taking those actions. In this study goal is to provide insight regarding CVD and thereby prevent teachers who are at risk from developing CVD.

4. Means

The means are the activities and devices used by the nurse to achieve the goal. In this study, the means is the multifactorial intervention package regarding prevention of CVD which includes information transfer in the form of lecture cum discussion with the aid of a power point presentation, video show on heart healthy exercises and reinforcement on prevention of CVD through a booklet.

5. Framework

Framework refers to the facilities in which nursing is practiced, it comprises of human, professional and organisational aspects of care. In this study, the framework refers to the class rooms of the selected schools.

Output: Validating the Needed Help was met

Output is the expected outcome of the input by the process of throughput. It is validating if the needed help was met through the delivered action to achieve the central purpose. In this study it refers to change in post test assessment of level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD.

1. Enhancement

In this study the achievement of goal or need was indicated by positive outcome that is attainment of adequate or moderately adequate knowledge, risk perception and readiness to change lifestyle behaviour, which is enhanced by continuity of practice.

2. Reassessment

Negative outcome is indicated by inadequate knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD. Reassessment and reinforcement is given to such teachers.

By integrating Wiedenbach's Helping Art Of Clinical Nursing Theory and J.W.Kenny's Open System Model the investigator was able to incorporate more concepts in the study, this helped the accomplishment of the study in an organized manner.

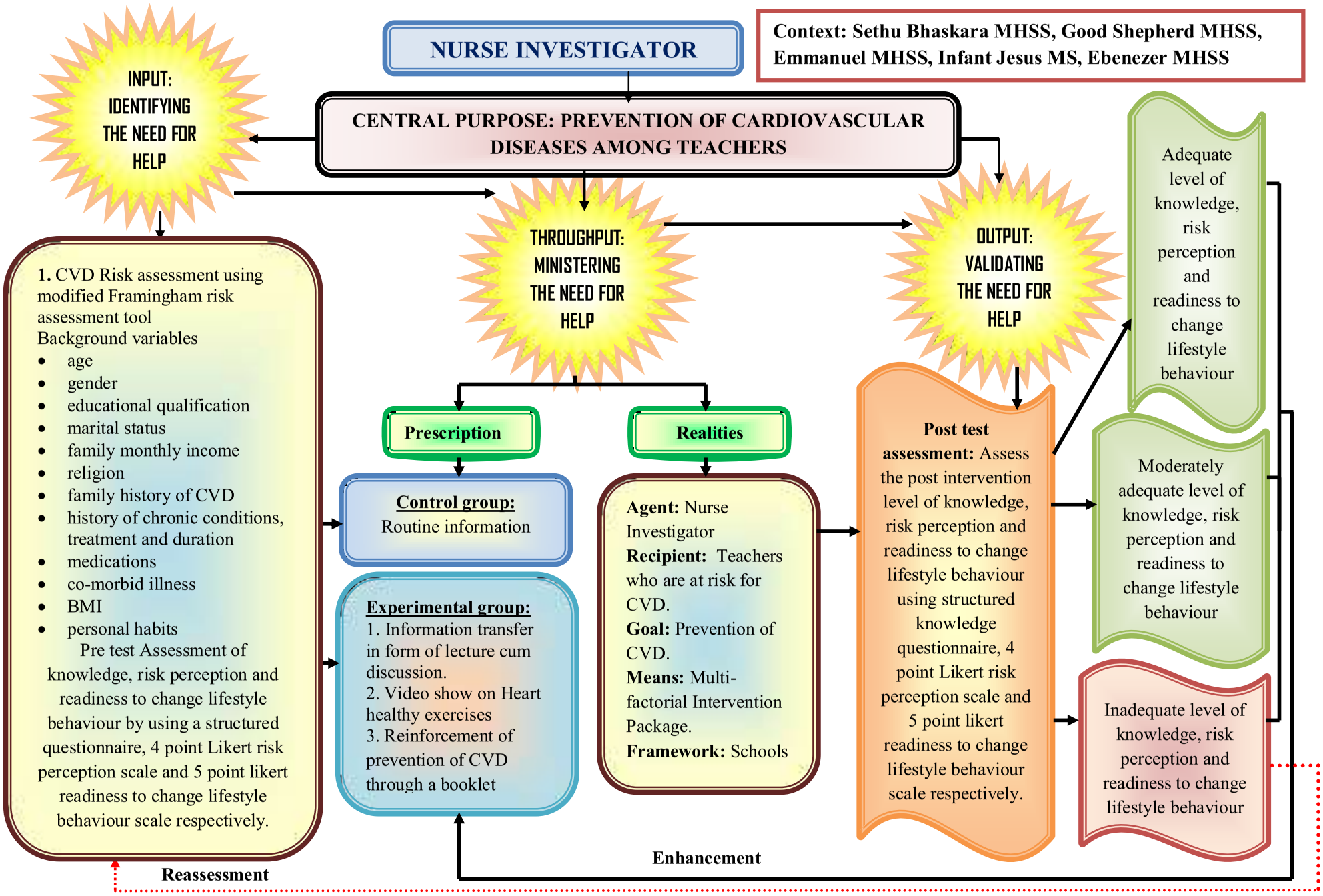


Fig.1.9.1CONCEPTUAL FRAMEWORK BASED ON INTEGRATED WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY AND J.W.KENNY'S OPEN SYSTEM MODEL

OUTLINE OF THE REPORT

Chapter 1 : Dealt with introduction, background of the study, significance and need for the study, objectives, operational definitions, assumptions, null hypotheses, delimitation and conceptual frame work.

Chapter 2: Contains the scientific reviews related to the present study.

Chapter 3: Presents the methodology of the study and plan for data analysis.

Chapter 4: Focuses on data analysis and interpretation.

Chapter 5: Enumerates the discussions and findings of the study

Chapter 6: Gives the summary, conclusion, implications and limitations of the study.

The study report ends with selected references and appendices.

CHAPTER 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

This chapter deals with the related literature review, which aids to generate a picture of what is known about a particular situation.

An extensive review of literature was done by the investigator to gain an insight into the problem, collect maximum information from systematic and critical review of scholarly publication and unpublished scholarly print materials. The logical sequence of the chapter is organized in the following sections.

SECTION 2.1: Scientific reviews related to prevalence of CVD.
SECTION 2.2: Scientific reviews related to impact of CVD risk conditions on health
SECTION 2.3: Scientific reviews related to strategies to prevent CVD
SECTION 2.4: Scientific reviews related to knowledge, risk perception and readiness to change lifestyle behaviour regarding CVD

SECTION 2.1: SCIENTIFIC REVIEWS RELATED TO PREVALENCE OF CVD

Al-Nooh A A, Abdulabbas Abdulla Alajmi A and Wood D (2014) conducted a cross sectional study to assess the prevalence of CVD Risk Factors among 1139 employees in the Bahrain through interview. Findings were: prevalence of overweight and obesity-78.4%, HTN -36.9%, total cholesterol (TC) level - 24.2%, Low Density Lipoprotein (LDL) level - 10.8%, High Density Lipoprotein (HDL) level - 47.55%, 50.8% do not engage in any type of physical activity (PA), 24.3% were not eating daily servings of fruits and vegetables, 16.1% were current smokers, 95.35% had either no or <3 CVD risk factors and 4.65% had 3-5 risk factors. The study concluded that high CVD risk factors prevalence is evident and prevention and control are a priority.

Sekhri et al (2014) conducted an epidemiological study to assess the prevalence of risk factors for CAD among 10,642 men and 1966 women (age 20–60 years) government employees across India. They were subjected to a questionnaire, medical examinations and anthropometric measurements. Findings revealed that 78.6% subjects had 2 or more risk factors for CAD. The study concluded that there is an immediate need

to initiate measures to raise awareness of these risk factors so that individuals at high risk for future CAD can be managed.

Logaraj M, Balaji R, John K R, Shailendra Kumar B, Hegde(2014) conducted a cross sectional study to compare the prevalence of CV risk factors among urban and rural population in Kancheepuram, Tamil Nadu. 1001 and 432 individuals (> 20 years) in rural and urban area respectively were assessed using a structured interview. Findings were that CV risk factors such as reduced intake of vegetables and fruits were more prevalence in rural population and reduced PA, increased BMI, systolic and diastolic HTN was noticed in urban population with no differences in the prevalence of smoking and alcoholism.

Rajeev Gupta et al (2012) conducted a country wide mortality statistics and morbidity survey to evaluate risk factors in middle socioeconomic subjects in India by stratified random sampling using house-to-house survey. Detailed history, clinical examination and biochemical tests were performed. 739 subjects (men 451, women 288) were included. Age-associated increase was observed in BMI, waist size, Waist Hip Ratio (WHR), systolic BP and fasting and TC, non-HDL cholesterol and triglycerides in women. The study concluded that there is a high prevalence of multiple CV risk factors in Indian middle class individuals.

Gift Norman, Carolin George, Aditi Krishnamurthy and Devashri Mukherjee (2012) conducted a community based cross sectional study to determine the CV risk profile and 10 year risk of fatal and non-fatal CV event in 47 villages of Karnataka. 3780 adults were screened for CVD risk factors. Findings showed the prevalence of at least one modifiable CVD risk factor in the population was 98.5%. An alarming 15.2% of the population had a >30% risk of getting fatal or non-fatal MI in 10 years. Older age, lack of education, physical inactivity and FH of MI/ stroke were associated with high CVD risk. Hence this study warrants strategies to improve awareness and promote healthy lifestyles to reduce CVD risk.

Rao N et al (2012) conducted a feasibility study among 434 South Asians in Royal Free Hampstead NHS Trust, H.E.A.R.T. UK and two Hindu temples in North London to provide screening for CVD risk factors. Measurements included

anthropometry, BP and lipid profiles. The results showed at least 1 modifiable CVD risk factor was present in 92% of the individuals screened; 52% were hypertensive, 40% were obese, 75% had central adiposity and 10% had TC/HDL cholesterol ratio > 6. The study concluded that a high prevalence of modifiable risk factors for CVD was detected in the population screened.

SECTION 2.2: SCIENTIFIC REVIEWS RELATED TO IMPACT OF CVD RISK CONDITIONS ON HEALTH

Harari G, Green M S and Zelber-Sagi S (2015) conducted a prospective cohort study to determine CV Occupational Risk Factor among 4819 (20-70 years) male industrial workers in Israel during 1985-1989 and followed-up for 22 years. Data on self-reported Occupational Physical Activity (OPA) and Leisure Time Physical Activity (LTPA) were merged with data on CHD mortality obtained from the National Death Registry. Findings revealed a higher incidence rate of CHD mortality among men who performed moderate-hard OPA compared with those who performed none-mild OPA. The study concluded that Moderate-hard OPA may be deleterious to health and should not be a substitute to LTPA.

Yi-Chia Wang, Chia-Wei Lin, Yu-Tsun Ho, Ya-Pin Huang and Shin-Liang Pan (2014) conducted a population based longitudinal follow-up study to investigate the association between migraine and IHD risk in Taiwan. 11,541 subjects (18-45 years) with migraine were enrolled in the experimental group and 11,541 randomly sampled subjects in the non-migraine group. Findings revealed that during follow-up, 121 subjects in the migraine group and 55 in the non-migraine group developed IHD. Compared to the non-migraine group, the Hazard Ratio (HR) of IHD for the migraine group was 2.50. The results showed an increased risk of developing IHD in young patients with newly diagnosed migraine.

Kim Y et al (2013) conducted a Multiethnic Cohort Study to examine association between various Sedentary Behaviour (SB) and CVD and mortality among 61,395 men and 73,201 women (45-75 years) among 5 ethnic groups (African American, Latino, Japanese American, Native Hawaiian and White) from Hawaii and Los Angeles, US. Findings showed total daily sitting was not associated with mortality in men, whereas in women the longest sitting duration (≥ 10 h/day vs <5 h/day) was associated with

increased CV (19%) mortality. The study concluded that leisure time spent sitting, particularly watching (Television) TV, may increase CV mortality.

Chomistek A K et al (2013) conducted a prospective Women's Health Initiative observational study to examine independent and joint associations of sitting time and PA with risk of incident CVD among 71,018 women(50-79 years of age) and free of CVD at baseline provided information on SB. First CVD events were centrally adjudicated. Findings revealed low PA and prolonged sitting time was associated with increased CVD risk, independent of LTPA, in postmenopausal women without a history of CVD. The study concluded that combination of low PA and prolonged sitting augments CVD risk.

Tobias Kurth, Vadim Bubes and Julie Buring (2013) conducted a prospective study **t**o evaluate relative contribution of migraine with aura (MA) to CVD incidence among 27,860 women with migraine aged ≥45 participating in the Women's Health Study who were free of CVD at baseline. Findings revealed 5130 reported migraine of whom 1435 (40%) reported MA. During 15 years of follow-up, 1030 major CVD events were confirmed. The study concluded that combination of traditional CV risk factors show strongest contribution to CVD occurrence, MA is a strong relative contributor to increased risk of CVD events.

Christian Selmer et al (2013) conducted a retrospective cohort study to examine the risk of major adverse cardiovascular events (MACEs) among 574,595 subjects with overt and subclinical hypothyroidism (SCH) who underwent thyroid blood tests, without prior thyroid disease in Copenhagen, Denmark. Findings revealed a total of 47,327 deaths. Risk of MACEs was elevated in overt and SCH driven by heart failure. The study concluded that heart failure is the leading cause of increased CV mortality in both overt and SCH.

Jarett Berry D et al (2012) conducted a meta-analysis to assess the life time risks of CVD using data from 18 cohort studies involving a total of 257,384 black men and women and white men and women whose risk factors for CVD were measured at the ages of 45, 55, 65, and 75 years. BP, cholesterol level, smoking and DM status were used to stratify participants according to risk factors. They observed that among participants who were 55 years of age, with an optimal risk-factor profile had substantially lower

risks of death from CVD through the age of 80 years than participants with two or more major risk factors.

Wilmot E G et al (2012) conducted a systematic review and meta-analysis to examine the association of sedentary time with CVD, CV and mortality. 18 studies (16 prospective, 2 cross-sectional) were included, with 794,577 participants. The greatest sedentary time compared with the lowest was associated with a 147% increase in the RR of CV events, a 90% increase in the risk of CV mortality. The study concluded that sedentary time is associated with an increased risk of CVD mortality.

Earl Ford S and Carl Casperson J (2012) conducted a systematic review of prospective studies to examine the associations between screen time and sitting time and fatal and non-fatal CVD. 8 studies were chosen. Findings revealed that greater sedentary time is associated with an increased risk of fatal and non-fatal CVD. It was concluded that this may better shape future guideline development as well as clinical and public health interventions to reduce the amount of sedentary behaviour in modern societies.

Wellington Fabiano Brito et al (2012) conducted a cross-sectional study to assess the level of PA among 1,681 public school teachers from São Paulo, southeastern Brazil. The International PA Questionnaire short version was applied and the level of PA was categorized as low, moderate or high. Findings showed that prevalence of low PA was strikingly high. The study concluded that variables such as age, gender and city area should be taken into account while planning and targeting campaigns aimed at promoting increased PA in this population.

Fen-Yu Tseng et al (2012) conducted a cohort study to evaluate the relationship between SCH and CVD mortality among 115,746 participants without a history of thyroid disease, ≥20 years of age recruited in Taiwan. Findings revealed 3,669 deaths during the follow-up period; 680 deaths were due to CVD. Compared with subjects with euthyroidism, after adjustment for age, sex, BMI, DM, HTN, dyslipidemia, smoking, alcohol consumption, betel nut chewing, PA, income, and education level, the RRs of deaths from CVD among subjects with SCH were 1.30 and 1.68 respectively. The study concluded that adult Taiwanese with SCH had an increased risk for CVD death.

Li-bo Yang et al (2012) conducted a meta-analysis of cohort studies to evaluate the association between SCH and the risk of CVD and CV mortality. 17 studies were included. The overall combined relative risks for individuals with SCH compared with the reference group were 1.19 for CVD and 1.52 for CV mortality. The study concluded that SCH significantly increased the risk of CVD and the risk of CV mortality for individuals with other morbidities.

Rod Taylor S, Kate Ashton E, Tiffany Moxham, Lee Hooper and Shah Ebrahim (2011) conducted a systematic review and meta-analysis of studies assessing the effect of alcohol consumption on multiple CV outcomes. 84 studies were included from 4,235 prospective cohort studies. The pooled adjusted relative risks for alcohol drinkers relative to non drinkers were 0.75 for CVD mortality, 0.71 for incident CHD and 0.75 for CHD mortality. Dose-response analysis revealed that the lowest risk of CHD mortality occurred with 1–2 drinks a day. The study concluded that light to moderate alcohol consumption is associated with a reduced risk of multiple CV outcomes.

Anders Grontved, Frank B (2011) conducted a meta-analysis of all prospective cohort studies to determine the association between TV viewing and fatal or non-fatal CVD. 8 studies were included. Findings showed that associations between time spent viewing TV and risk of CVD were linear. The estimated absolute risk differences per every 2 hours of TV viewing per day were 38 cases of fatal CVD/100,000/year. The study concluded that prolonged TV viewing was associated with increased risk of CVD.

Eva-Maria Backe, Andreas Seidler, Ute Latza, Karin Rossnagel and Barbara Schumann (2011) conducted a systematic review to assess evidence for association between different models of stress at work, and CV morbidity and mortality. 26 publications were included, describing 40 analyses out of 20 cohorts. The risk estimates for work stress were associated with a statistically significant increased risk of CVD in 13 out of the 20 cohorts. The study concluded besides individual measures to manage stress and to cope with demanding work situations, organisational changes at the workplace need to be considered to find options to reduce occupational risk factors for CVD.

Bessonova L et al (2011) examined the relationship between BMI and mortality among 115,433 women participating in the California Teachers Study. During follow up, 10,574 deaths occurred. Findings revealed that obesity was associated with increased all-cause mortality, as well as death from any cancer and CV and respiratory diseases. These results help to identify groups at risk for BMI-related poor health outcomes.

Sarwar N et al (2010) undertook a meta-analysis of 102 prospective studies to quantify the association of DM and fasting glucose concentration with risk of CHD. The following variables: age, sex, smoking, systolic BP, and BMI were used to calculate HRs. Analyses included data for 698,782 people. Adjusted HRs with DM were: 2·00 for CHD. HRs for CHD were higher in women than in men, at 40–59 years than at 70 years and older, and with fatal than with non-fatal disease. The study concluded that DM confers about a two-fold excess risk for a wide range of vascular diseases, independently from other conventional risk factors.

Emily Williams D, James Nazroo N, Jaspal Kooner S, and Andrew Steptoe (2010) conducted a cross sectional study to explore the differences in psychosocial risk factors related to CHD among 1065 healthy South Asian and 818 white men and women from West London, UK. They completed psychosocial questionnaires. Findings revealed 50.5% was Sikh, 28.0% was Hindu, and 15.8% was Muslim. Muslim participants were more socioeconomically deprived and experienced higher levels of chronic stress, Muslim men smoked more, reported lower alcohol consumption and did less PA than other groups.

Eliezer Schnall et al (2010) conducted a Women's Health Initiative Observational Study to assess relationship between religion and CV outcomes among 92,395 women in New York, US. Religion and spirituality was measured with 3 questions: religious affiliation, RSA, and strength/comfort derived from religion. Findings revealed women who had a religious affiliation (93%), those with RSA (44%) and those who received "a great deal" of strength/comfort from religion (45%) were more likely than those receiving none to have a coronary event during follow-up. These findings did not control for race or age. Therefore, controlling for these factors may have explained the association.

SECTION 2.3: SCIENTIFIC REVIEWS RELATED TO STRATEGIES TO PREVENT CVD

Imes C C, Lewis F M, Austin M A, Dougherty C M (2014) conducted a single group pre and post test to evaluate effectiveness of a behaviourally focused intervention designed to increase perceived CVD and CHD risk in young adults with a FH of CVD/CHD in Pittsburg, Pennsylvania. 15 samples were chosen. Intervention included tailored messages about 10-year and lifetime CHD risk based on risk factors and brief counselling on healthy lifestyle to decrease risk. Findings revealed that intervention was effective and participants requested more information on healthy food choices and which exercises most improve CV health.

Petr E J et al (2014) carried out Dallas heart study to estimate perception of lifetime risk for MI among 2,998 subjects which was assessed by a 5-point scale. Findings revealed 64.8% had high predicted lifetime CVD risk. The study concluded that misperception of CVD lifetime risk is common and highlighted the importance of effectively communicating the significance of traditional risk factors in determining the lifetime risk for CVD.

Ramon Estruch et al (2013) conducted an observational cohort study to assess the effect of Mediterranean diet on primary prevention of CVD, a total of 7447 randomly assigned persons with high CV risk were enrolled which eventually reduced to 288 participants in a multicentre trial in Spain, they were subjected to one of the 3 diets (Mediterranean diet supplemented with olive oil, Mediterranean diet supplemented with mixed nuts and a control diet) and they received quarterly individual and group educational sessions and were followed for a period of 4.8 years. Findings revealed among persons at high CV risk, a Mediterranean diet supplemented with extra-virgin olive oil or nuts reduced the incidence of major CV events.

Marcia de Oliveira Otto C et al (2012) conducted a multiethnic study of atherosclerosis to investigate the association of Saturated Fat (SF) consumption from different food sources and the incidence of CVD. Participants were 45–84 y old at baseline (n = 5209). Diet was assessed by using a 120-item food-frequency questionnaire. CVD incidence (316 cases) was assessed during follow-up visits. Findings revealed a higher intake of dairy SF was associated with lower CVD risk. In contrast, a

higher intake of meat SF was associated with greater CVD risk. The study concluded that associations of SF with health may depend on food-specific fatty acids and nutrient constituents in foods that contain SF.

Marjorie L McCullough et al (2012) conducted a cohort study to examine the association between flavonoid intake and CVD mortality among 38,180 men and 60,289 women in US. They completed questionnaires on medical history and lifestyle behaviours, including a 152-item food-frequency questionnaire. Findings revealed men and women with total flavonoid intakes in the top quintile had a lower risk of fatal CVD. The study concluded that most inverse associations appeared with intermediate intakes, suggesting that even relatively small amounts of flavonoid-rich foods may be beneficial.

Jian Li and Johannes Siegrist (2012) conducted a meta-analysis to update evidence on associations of PA and CVD. They included 21 prospective studies with a sample size of >650,000 adults who were initially free from CVD, and with some 20,000 incident cases documented during follow-up. Findings suggested that high level of LTPA and moderate level of OPA have a beneficial effect on CV health by reducing the overall risk by 20-30%. This evidence supports efforts of primary and secondary prevention of CVD in economically advanced as well as in rapidly developing countries.

Farag N H et al (2010) conducted a community-based participatory research by evaluating the efficacy of PA in improving CVD in a rural public school system in South Western Oklahoma. 187 participants completed a pre intervention screening for CVD risk factors followed by a PA promotion program. Post test screening was conducted after 6 months. Findings revealed participants had low cholesterol, lower systolic BP and higher self-reported PA levels.

SECTION 2.4: SCIENTIFIC REVIEWS RELATED TO KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING CVD

Isil Isik Andsoy, Sevinc Tastan, Emine Iyigun, Lawrence Kopp R (2015) conducted a descriptive cross-sectional study to assess K & A of a population (N=300) in Turkey towards CVD risk. CVD Risk Factors Knowledge Scale was administered. Results showed that mean knowledge score was moderate. Women who have a history of

DM and hyper-cholesterol perceived themselves at high risk. The study gives insight about which subgroups of people may need more attention from health professionals in Turkey's CVDs prevention.

Christopher Imes C and Frances Marcus Lewis (2014) conducted a systematic review to summarize the published research on the relationship between FH of CVD; individual's perceived risk and health-related behaviour. Findings from 25 articles revealed that there was a positive relationship between FH of CVD and perceived risk. However, the relationship between a FH of CVD and health-related behaviour change and perceived risk was inconsistent. The study concluded that a person's awareness of FH of CVD or his or her own risk for CVD is not a sufficient predictor of changes in his or her health-related behaviour.

Patsy Spratling M et al (2014) conducted an exploratory single group, pre test/post test educational intervention study to promote knowledge and awareness of CVD among 64 women with recent preeclampsia from Alabama. Telephone based interview was done. Knowledge about CVD, risk perception and study covariates (age, race, parity, income, marital status, education and history of preeclampsia) were measured both before and after the intervention. The levels of CVD perception were significantly higher than the baseline.

Brown M C et al (2013) conducted a survey to elicit women's perception of future CV risk among 12 women with recent preeclampsia who attended a postnatal follow up clinic in New Castle, New York. Findings revealed FH of CVD was associated with a greater awareness of future CV risk when compared to women without traditional risk factors who did not perceive any risk.

Cox J L et al (2013) conducted a prospective study in Nova Scotia, Canada to assess the effectiveness of risk factor screening, behavioural counselling, and pharmacological treatment to lower CVD risk via a pre and post intervention health risk assessment, individualized intervention with behaviour modification, risk factor treatment, and linkage to community programs, with 1-year follow-up. 1509 patients were enrolled from and 72% completed the study. Findings revealed significant improvements in all modifiable risk factors occurred through lifestyle modification. The

study concluded that CV risk can be effectively decreased via lifestyle changes by readiness to change assessment and individualized counselling targeting specific behaviours.

Seef S, Jeppsson A, Stafstrom M (2013) carried out a descriptive cross-sectional study to assess knowledge about CHD, attitude towards prevention and risk reduction barriers in Ismailia, Egypt. 125 samples were included and an interview questionnaire was administered. Findings settled that, total knowledge about CHD was satisfactory but lower than the level of attitude. The study concluded that the health system needs to engage patients in their plans and break related barriers, with development of health education programs based on needs assessment.

Mukattash T L et al (2012) conducted a cross sectional study to assess the level of knowledge and understanding of CVD among Jordan's general public, their behaviour towards CVD, using interview administered questionnaire among 1,000 members of general public. Findings showed that general public in Jordan had limited knowledge and awareness of CVD. The study concluded to positively impact CVD prevention and management, community health workers must develop and promote effective and accessible services.

Anug M N et al (2012) conducted a cluster randomized trial to assess the effectiveness of advanced health education intervention on salt consumption and prevention of CVD among 800 high CVD risk patients attending DM and HTN clinics in health centres in Delhi based on the salt content in daily diet and 24 hrs salt intake. Findings revealed that risk was high in 482 patients. The study concluded that dietary salt restriction will be applied as a prioritised community level intervention for prevention of CVD.

Crouch R, Wilson A and Newbury J (2011) conducted a systematic review of 9 trials to determine the effectiveness of primary health education for cardiac risk reduction in healthy women aged 16-65 years living in rural areas. Findings showed interventions targeting PA reported that PA can be increased and can be sustained at 12 months. While there were decreases in BP at 6 months, studies with a 5-year follow up found no reduction in both systolic and diastolic BP. Dietary modification programs did

not sustain an effect over a long period of time. The study concluded that resources and time in primary care might be better spent on patients at high risk of CVD or existing heart disease.

Homko C J et al (2010) undertook a cross sectional study to examine gender-based differences in CV risk factors and risk perception among 211 individuals (88 men and women) with DM from a telemedicine trial. Assessments included BP, A1C, lipid profile, medication history, and knowledge and risk perception surveys. Findings showed women perceived their risk significantly higher than men. The study concluded that multifaceted approaches to are needed to target CVD risk reduction among individuals with DM.

CHAPTER 3

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

The methodology is the significant part of any research study which will enable the researcher to project a blue print of the research. It describes the research design, variables, settings of the study, population, sample, inclusive and exclusive criteria for sample selection, sample size, sampling technique, development and description of the tool and plan for data analysis.

3.1 RESEARCH APPROACH

Quantitative research approach has been used for the study.

3.2 RESEARCH DESIGN

The research design used for the study is quasi experimental non equivalent pretest and post test with control group design based on Polit and Hungler (2011). The investigator was not able to do randomization because of non-availability of more number of samples.

SCHEMATIC REPRESENTATION OF THE QUASI-EXPERIMENTAL STUDY

<table>
<tr><td rowspan="3">Assess the level of risk of developing CVD by using Modified Framingham risk assessment tool</td><td>Group</td><td>PRETEST (O1)
(DAY 1)</td><td>INTERVENTION
(X)
(SAME DAY)</td><td>POST TEST (O2)
(DAY 7)</td></tr>
<tr><td>Experimental group</td><td rowspan="2">Assess the pretest level of knowledge, risk perception and readiness to change lifestyle behaviour by using structured knowledge questionnaire, 4 point likert risk perception scale and 5 point likert readiness to change lifestyle behaviour scale.</td><td>Multifactorial Intervention Package (MIP):
1.Information transfer in form of lecture cum discussion with the aid of a power point presentation
2.Video show on heart healthy exercises
3.Reinforcement on prevention of CVD through a booklet</td><td rowspan="2">Assess the post test level of knowledge, risk perception and readiness to change lifestyle behaviour by using structured knowledge questionnaire, 4 point likert risk perception scale and 5 point likert readiness to change lifestyle behaviour scale.</td></tr>
<tr><td>Control group</td><td>Normal routine</td></tr>
</table>

3.3 VARIABLE

3.3.1 Independent Variable

The independent variable is the Multifactorial Intervention Package regarding prevention of CVD.

3.3.2 Dependent Variables

The dependent variables are knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD.

3.3.3 Extraneous Variables

It consists of demographic variables such as age, gender, educational qualification, marital status, religion, family income, type of family and Clinical variables such as family history of CVD, personal history of Co-morbid illness (Hypothyroidism, Migraine), medications, chronic diseases (Preeclampsia & Diabetes Mellitus), treatment (regular/irregular) and BMI.

3.4 SETTING

The research settings were Private Matriculation and Higher Secondary schools, the selected schools for the experimental group were Sethu Bhaskara Matriculation Higher Secondary School (SBMHSS), Pudur, Good Shepherd Matriculation Higher Secondary School (GSMHSS), Pattabiram and for the control group were Infant Matriculation School (IMS), Pattabiram, Immanuel Matriculation Higher Secondary School (IMHSS), Pattabiram and Ebenezer Matriculation Higher Secondary School (EMHSS), Korattur. Each school employed approximately 30-100 teachers.

3.5 POPULATION

3.5.1 Target population

All the teachers who are at risk of developing CVD employed in schools based on modified Framingham risk assessment tool.

3.5.2 Accessible population

Teachers who are at risk of developing CVD based on modified Framingham risk assessment tool, employed in the selected setting.

3.6 SAMPLE

Teachers who were at risk of developing CVD and who fulfilled the sample selection criteria

3.7 SAMPLE SIZE

Sample of 120 (60 each in experimental and control group), who fulfilled the inclusion criteria.

3.8 CRITERIA FOR SAMPLE SELECTION

3.8.1 Inclusion criterias'

Teachers who are

1. at low, moderate, and high level of risk of CVD based on modified Framingham risk assessment tool
2. aged above 25 yrs
3. willing to participate
4. able to read and understand English

3.8.2 Exclusion criterias'

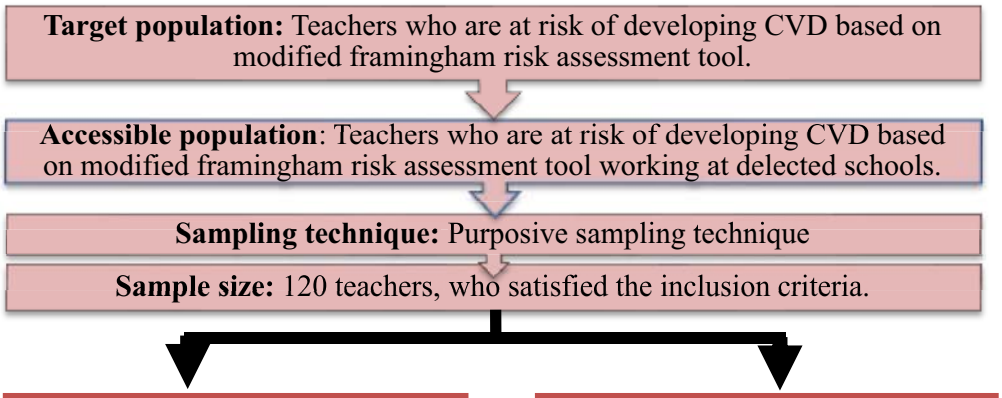
Teachers who

1. had been diagnosed with CVD
2. have restriction in performing exercises
3. had already undergone any awareness programme on prevention of CVD

3.9 SAMPLING TECHNIQUE

Purposive sampling technique was used in the study. Teachers with low, moderate or high risk score on the modified Framingham risk assessment tool were selected as samples

SCHEMATIC REPRESENTATION FOR SAMPLING



Name of schools	Screened population	At Risk population
SBMHSS	60	45
GSMHSS	30	15
Total	90	60

Name of schools	Screened population	At Risk population
IMS	30	15
IMHSS	45	20
EMHSS	45	25
Total	120	60

3.10 DEVELOPMENT AND DESCRIPTION OF THE TOOL

After an extensive review of literature, discussion with the experts and with the investigators professional experience, the investigator developed a questionnaire to assess knowledge level, a 4 point likert scale to assess risk perception and a 5 point likert scale to assess readiness to change lifestyle behaviour.

The tool constructed in this study has two parts:

3.10.1: Assessment Tools

3.10.2: Intervention tool – Multifactorial Intervention Package

3.10.1 Assessment Tools

Tool I: Modified Framingham risk assessment tool

Tool II: Background variables.

Tool III: Structured questionnaire to assess the knowledge level of teachers regarding risk factors of CVD.

Tool IV: 4 point likert risk perception scale

Tool V: 5 point likert readiness to change lifestyle behaviour scale

Tool I: Modified Framingham risk assessment tool.

This part consisted of 12 questions (yes/no type) that assessed the level of risk of developing CVD.

Scoring

Each "yes" was awarded a score of '1' and each "no" was awarded '0'. The overall score is 12, maximum score is 12 and minimum score is 0. The raw data was computed to interpret the level of risk.

Interpretation of Modified Framingham risk assessment tool

Score	Inference
<10%	Low risk
10-20%	Moderate risk
>20%	High risk

Tool II: Background variables.

This part consisted of structured questionnaire to assess the demographic data and clinical data. It consists of demographic variables and clinical variables such as age, gender, educational qualification, marital status, religion, family income, type of family, family history of CVD, history of Co-morbid illness (Hypothyroidism, Migraine), medications and chronic diseases (Preeclampsia & Diabetes Mellitus), treatment (regular/irregular), personal Habits (consumption of junk foods/regular exercise) and BMI.

Tool III: Structured knowledge questionnaire

This part consisted of structured knowledge questionnaire to assess the knowledge level of teachers regarding risk factors of CVD. It consisted of 20 questions. Each question ended with multiple choices. Teachers were asked to select the correct answer from the four options given.

Scoring key

Each correct answer was given '1' mark, and wrong and unattended question was given '0' mark. The raw score was converted to % to interpret the level of knowledge, the overall score was 20, maximum score is 20 and minimum score is 0.

Interpretation of level of knowledge

Score	Level of knowledge
≤50%	Inadequate level of knowledge
51-75%	Moderate level of knowledge
>75%	Adequate level of knowledge

Tool IV: 4 point likert risk perception scale.

This part consisted of a structured rating scale to assess the CVD risk perception. This consisted of 10 items positively and negatively worded scoring from 1-4.

Scoring

Type of Questions	Strongly Disagree	Disagree	Agree	Strongly Agree
Positive questions	1	2	3	4
Negative questions	4	3	2	1

The raw score was converted to percentage (%) to interpret the level of CVD risk perception, the overall score was 40, maximum score is 40 and minimum score is 10.

Interpretation of level of CVD risk perception

Score	Level of readiness
≤50%	Inadequate CVD risk perception
51-75%	Moderate CVD risk perception
>75%	Adequate CVD risk perception

Tool V: 5 point likert readiness to change lifestyle behaviour scale.

This part consisted of a structured rating scale to assess the readiness to change lifestyle behaviour. This consisted of 10 positively worded items scoring from 1-5.

Scoring

Type of questions	No interest	Thinking about it	Decided to do	Began to do	Already doing
Positive questions	1	2	3	4	5

The raw score was converted to percentage (%) to interpret the level of readiness to change lifestyle behaviour, the overall score was 50, maximum score is 50 and minimum score is 50.

Interpretation of level of readiness to change lifestyle behaviour

Score	Level of readiness
≤50%	Inadequate readiness
51-75%	Moderate readiness
>75%	Adequate readiness

3.10.2 Interventional Tool:

The interventional tool prepared by the investigator is Multifactorial Intervention Package, consisting of a set of interventions, administered to teachers at risk, in order to bring change in their level of knowledge, the risk perception and lifestyle behaviour regarding prevention of CVD, through:

- A power point presentation that transfers information in form of lecture cum discussion on definition of selected Cardiovascular Diseases (Hypertension, Heart failure, Coronary Artery Disease, Myocardial Infarction, Peripheral Vascular Disease) causes, risk factors, manifestations, possible complications and preventive measures such as regular aerobic exercises, cessation of smoking and alcohol, restriction of fat, salt and sugar intake and stress management. (30 minutes)

- Video show on “Heart Healthy Exercises” which includes stretching exercises, warm up exercises, cardio work out and brisk walking. (15 minutes)
- Information booklet for reinforcement on prevention of CVD which consists of definition, causes, risk factors, manifestations, possible complications and preventive measures.

The total duration of the intervention is about 45min.

The investigator administered the MIP for a group of 20-25 members at a time.

3.11 CONTENT VALIDITY

The content validity of the data collection tool and intervention tool was ascertained with the expert’s opinion in the following field of expertise;

- Cardiologist-1
- Medical-Surgical Nursing experts - 4
- Physiotherapist - 1

The following modifications were made in the data collection and intervention tool as per the expert’s suggestions. All the experts had their consensus and then the tool was finalized. Experts suggested adding some of the variables and modifying the options in the multiple choice questions. The options of the multiple choice questions were also refined.

3.12 ETHICAL CONSIDERATION

Ethics is a system of moral values that is concerned with the degree to which the research procedures adheres to the professional, legal and social obligations to the study participants, **Polit and Hungler (2012)**.

The ethical principles followed in the study were:

1. BENEFICIENCE

The investigator followed the fundamental ethical principle of beneficence by adhering to:

a) Freedom from harm and discomfort

The study was beneficial for the samples as it enhanced their knowledge regarding prevention of CVD.

b) Protection from harm and discomfort

The investigator explained the nature of the study to the samples and ensured that none of the samples were exploited or denied. Investigator also made it clear prior to showing the video on "Heart Healthy Exercises" that before doing any discomfort a physician should be consulted.

2. RESPECT FOR HUMAN DIGNITY

The investigator followed the second ethical principle of respect for human dignity. It includes the right to self determination and right to self disclosure.

a) The right to self determination

The investigator gave full freedom to the participants to decide voluntarily whether to participate in the study or to withdraw from the study and right to ask questions.

b) The right to full disclosure

The researcher has fully described the nature of the study, the person's right to refuse participation and researcher's responsibilities based on which both oral and written informed consent was obtained from the participants.

3. JUSTICE

The selection of the study participants was completely based on research requirements. A full privacy was maintained throughout the data collection.

a) Right to fair treatment

The researcher selected the study participants based on the research requirements. The investigator followed the rules and regulations of Institutional ethical committee (ICCR).

b) Right to privacy

The researcher maintained the participant's privacy throughout the study without revealing the score of the participants

4. CONFIDENTIALITY

The researcher maintained confidentiality of the data provided by the participants.

3.13 RELIABILITY OF THE TOOL

The reliability of the tool was established by split half method for modified Framingham risk assessment tool with 'r' value of 0.92, test- retest method for knowledge questionnaire with 'r' value of 0.94, split-half method for 4 point likert risk perception scale with 'r' value of 0.9 and split-half method for 5 point likert readiness to change lifestyle behaviour scale with 'r' value of 0.95. It was found that the tool was reliable and practicable to implement in the main study.

3.14 PILOT STUDY

The pilot study was conducted at Ebenezer Marcus Matriculation Higher Secondary School, Pudur, and Emmanuel Methodist Matriculation Higher Secondary School, Pudur after obtaining ethical committee clearance from International Centre for Collaborative Research (ICCR). A formal written permission was sought from the Principal of Omayal Achi College of Nursing and the Principals of Ebenezer Marcus Matriculation Higher Secondary School and Emmanuel Methodist Matriculation Higher Secondary School.

The setting for experimental group was Emmanuel Methodist Matriculation Higher Secondary School which employs over 70 teachers, the investigator was given 15 teachers and 5 teachers were found to be at risk of developing CVD using modified Framingham risk assessment tool, who fulfilled the inclusion criteria using non-probability purposive sampling technique. A brief explanation was given regarding purpose of the study to the participants and written consent was obtained.

The setting for the control group was Ebenezer Marcus Matriculation Higher Secondary School which employs over 150 teachers, the investigator was given 20 teachers and 5 teachers were found to be at risk of developing CVD using modified Framingham risk assessment tool, who fulfilled the inclusion criteria using non-probability purposive sampling technique. A brief explanation was given regarding purpose of the study to the participants and written consent was obtained.

On 05.02.15 the teachers in the experimental group were gathered and seated comfortably in a well ventilated room. Demographic details were obtained from the samples through the structured demographic profile. Then the investigator assessed the

pre test level of knowledge using structured questionnaire, cardiovascular risk perception using structured 4 point likert risk perception scale and readiness to change lifestyle behaviour using 5 point likert readiness to change lifestyle behaviour scale. Following this, the investigator administered the Multifactorial Intervention Package (MIP) regarding prevention of CVD, through lecture cum discussion for 30 minutes for the group and video show on cardio workout exercises by the investigator. The total time taken to administer the MIP was 45 minutes. Similarly the pre test was administered to the control group on 6.02.15, and routine care was carried out. After 7 days, the post test was conducted using same tools for both the experimental and control groups respectively. The MIP for control group was given after the completion of post test.

The analysis of the pilot study revealed that:

- Assessment of level of risk of CVD among experimental and control group showed that 80% had low risk and 20% had moderate risk in both the groups.
- The unpaired 't' test value to compare post test knowledge scores, CVD risk perception scores and readiness to change lifestyle behaviour scores regarding prevention of CVD among teachers between the experimental and control group was 1.938, 4.243 and 1.709 respectively. The post test knowledge scores did not show any statistical significance, post test risk perception scores showed low statistical significance at $p< 0.05$ level and post test readiness to change lifestyle behaviour scores did not show any statistical significance.
- The 'r' value to correlate post test knowledge with CVD risk perception scores, post test knowledge with readiness to change lifestyle behaviour scores and post test CVD risk perception with readiness to change lifestyle behaviour scores regarding prevention of CVD among teachers in the experimental group was 0.675, 0.187 and 0.493 which showed moderate correlation, poor correlation and moderate correlation respectively.

The result of pilot study revealed that the assessment and intervention tool was reliable, feasible and practicable to conduct the main study. The following suggestion was given by experts: to select a large sample size for the main study. Experts suggested adding some of the variables in the background variables and the tool was refined.

3.15 PROCEDURE FOR DATA COLLECTION

The main study was conducted after obtaining formal permission from the Principal, Omayal Achi College of Nursing and the Principals of the selected schools and also obtained.

The study was conducted for a period of 4 weeks. On 15.04.15 and 05.06.15 the investigator screened 60 teachers and 30 teachers from SBMHSS and GSMHSS respectively using modified Framingham risk assessment tool and found 45 and 15 teachers were found to be at risk of CVD from the above mentioned schools respectively in the experimental group. Similarly in control group on 06.06.15 and 22.06.15, the investigator screened 30, 45 and 45 teachers from IMS, IMHSS and EMHSS respectively using modified Framingham risk assessment tool and 15, 20 and 25 teachers were found to be at risk of CVD from the above mentioned schools respectively. Hence a total of 120 teachers (60 teachers each in the experimental and control group) who were at risk of developing CVD were selected based on modified Framingham risk assessment tool and inclusion criteria using purposive sampling technique.

The investigator met the study samples seated in a well ventilated classroom, introduced about self and briefly explained regarding the purpose of the study. After obtaining a written consent form the teachers and pledge of confidentiality. Their demographic variables were collected using a structured questionnaire and pre test was conducted for both experimental group, using structured knowledge questionnaire to assess the knowledge on CVD, risk perception using structured 4 point likert scale and readiness to change lifestyle behaviour using structured 5 point likert scale. Approximately it took 20 min for each sample. The samples were assigned with an identification number to maintain their confidentiality.

After the completion of the pre test, the investigator administered the MIP through a lecture cum discussion (30 minutes) on CVD and explained about the risk factors, signs and symptoms, medical management, complications, preventive strategies and life style modifications of the disease and a video (15 minutes) showed on heart healthy exercises which includes stretching exercises, warm up exercises, cardio work out and brisk walking, after which a booklet containing the information transferred was given to the patient for reinforcement. It approximately took 45 minutes for

administering the MIP. On the seventh day after pre test, the investigator conducted the post test using the same tool.

The same procedure for data collection was repeated for the control group. The normal routine was carried out for the teachers in the control group. On the seventh day after pre test, the investigator conducted the post test. The investigator gave the MIP on Prevention of CVD on the day of completion.

All ethical principles were adhered throughout the course of the study.

3.16 PLAN FOR DATA ANALYSIS

Data was analyzed by using both descriptive and inferential statistics.

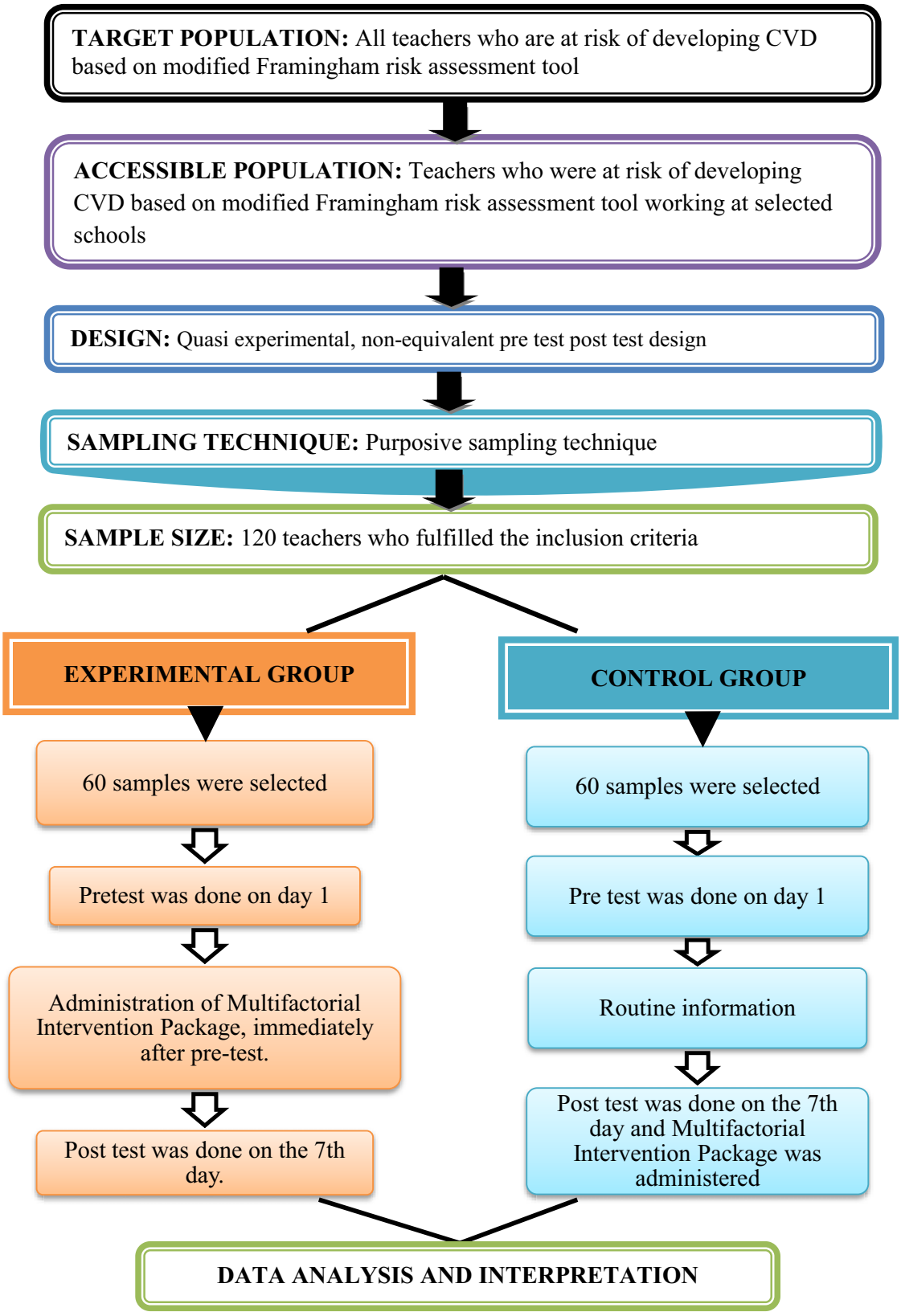
Descriptive Statistics

1. Frequency and percentage distribution was be used to analyze the demographic data of teachers.
2. Mean and standard deviation was used to assess level of knowledge, risk perception, readiness to change lifestyle behaviour of teachers.

Inferential Statistics

1. Paired ‘t’ and unpaired ‘t’ test was used to compare the data between the experimental and control group.
2. Correlation co-efficient to find the relationship between the mean differed level of knowledge, risk perception & readiness to change lifestyle behaviour between experimental and control group
3. One way ANOVA, unpaired ‘t’ and chi square was used to associate the mean differed level of demographic variables with the level of knowledge, risk perception, readiness to change lifestyle behaviour of teachers.

Fig.3.1 SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY



CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

DATA ANALYSIS AND INTERPRETATION

The word Analysis refers to the process of organizing and synthesizing the data in such a way that the research question can be answered and hypothesis tested **(Polit and Hungler, 2011)**

This chapter deals with analysis and interpretation of the data collected from 120 teachers at selected schools, Chennai, to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers.

The data collected was organized, tabulated and analyzed according to the objectives. The findings based on the descriptive and inferential statistical analysis are presented under the following sections.

ORGANISATION OF THE DATA

Section 4.1: Description of demographic variables of teachers in the experimental and control group.

Section 4.2: Assessment of existing level of risk for developing CVD among teachers in the experimental and control group.

Section 4.3: Assessment of pretest and post test level of knowledge, risk perception and readiness to change behaviour regarding prevention of CVD among teachers in the experimental and control group.

Section 4.4: Effectiveness of Multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour among teachers within and between experimental and control group.

Section 4.5: Relationship between knowledge, risk perception and readiness to change behaviour regarding prevention of CVD among teachers in experimental and control group.

Section 4.6: Association of selected demographic variables with their mean differed score of knowledge, risk perception and readiness to change behaviour regarding prevention of CVD among teachers in the experimental and control group.

SECTION 4.1: DESCRIPTION OF DEMOGRAPHIC VARIABLES OF TEACHERS IN THE EXPERIMENTAL AND CONTROL GROUP.

Table 4.1.1: Frequency and percentage distribution of demographic variables such as age, gender and educational qualification of teachers in experimental and control group.

N= 120(60+60)

S.No	Demographic Variables	Experimental Group n=60		Control Group n=60		Chi-Square Value
		No.	%	No.	%	
1.	**Age in years (Matching variable)**					$\chi^2 = 0.726$ p = 0.80 N.S
	26 – 35	14	23.33	13	21.67	
	36 – 45	22	36.67	21	35.00	
	46 – 55	22	36.67	22	36.67	
	>55	2	3.33	4	6.67	
2.	**Gender (Matching variable)**					$\chi^2 = 0.138$ p = 0.709 N.S
	Male	25	41.67	23	38.33	
	Female	35	58.33	37	61.67	
3.	**Educational qualification**					$\chi^2 = 0.361$ p = 0.947 N.S
	Nursery trained	2	3.33	2	3.33	
	Secondary trained	1	1.67	2	3.33	
	Undergraduate	18	30.00	17	28.33	
	Postgraduate	39	65.00	39	65.00	
	Others	0	0.00	0	0.00	

The above table 4.1.1 depicts the frequency and percentage distribution of demographic variables such as age, gender, educational qualification in experimental and control group.

In the experimental group, 22(36.67%) were in the age group of 36 - 45 and 46 – 55 years, 35(58.33%) were females and 39(65%) were post graduates. In the control group, 22(36.67%) were in the age group of 46 – 55 years, 37(61.67%) were females and 39(65%) were post graduates.

The chi-square analysis results show that the investigator maintained homogeneity in age, gender, educational qualification in the experimental and control group.

Table 4.1.2: Frequency and percentage distribution of demographic variables such as marital status, type of family and family monthly income of teachers in experimental and control group.

N = 120 (60+60)

S.No	Demographic Variables	Experimental Group n=60		Control Group n=60		Chi-Square Value
		No.	%	No.	%	
4.	**Marital status**					
	Single	4	6.67	6	10.00	$\chi^2 = 1.482$ p = 0.476 N.S
	Married	56	93.33	53	88.33	
	Separated	0	0.00	0	0.00	
	Widowhood	0	0.00	1	1.67	
5.	**Type of family**					
	Nuclear family	36	60.00	40	66.67	$\chi^2 = 0.574$ p = 0.448 N.S
	Joint family	24	40.00	20	33.33	
	Extended family	0	0.00	0	0.00	
	Others	0	0.00	0	0.00	
6.	**Family monthly income in Rs.**					
	<10,000	4	6.67	8	13.33	$\chi^2 = 0.361$ p = 0.947 N.S
	10,000 - 20,000	14	23.33	10	16.67	
	21,000 - 30,000	26	43.33	23	38.33	
	>30,000	16	26.67	19	31.67	

The above table 4.1.2 reveals the frequency and percentage distribution of demographic variables such as marital status, type of family and family monthly income of teachers in experimental and control group.

In the experimental group, 56(93.33%) were married, 36(60%) belonged to a nuclear family and 26(43.33%) had a family monthly income of Rs.21, 000 - 30,000. In the control group, 53(88.33%) were married, 40(66.67%) belonged to a nuclear family and 23(38.33%) had a family monthly income of Rs.20, 000 - 30,000.

The chi-square analysis shows that the investigator maintained homogeneity in marital status, type of family and family monthly income.

Table 4.1.3: Frequency and percentage distribution of demographic variables such as religion, family history of CVD and nature of relationship in experimental and control group.

N = 120 (60+60)

S.No	Demographic Variables	Experimental Group n=60		Control Group n=60		Chi-Square Value
		No.	%	No.	%	
7.	**Religion**					
	Hindu	40	66.67	20	33.33	$\chi^2 = 14.88$ p = 0.000 S***
	Christian	17	28.33	38	63.33	
	Muslim	3	5.00	2	3.33	
	Others	0	0.00	0	0.00	
	Family and personal history					
8.	**Family history of CVD**					$\chi^2 = 0.146$ p = 0.701 N.S
	Yes	20	33.33	22	36.67	
	No	40	66.67	38	63.33	
9.	**If yes, Nature of relationship**					
	Paternal	10	50.00	11	50.00	$\chi^2 = 0.286$ p = 0.866 N.S
	Maternal	9	45.00	9	40.91	
	Both	0	0.00	0	0.00	
	Sibling	1	5.00	2	9.09	

The above table 4.1.3 depicts the frequency and percentage distribution of demographic variables such as religion, family history of CVD and nature of relationship in experimental and control group.

In the experimental group, 40(66.67%) were Hindus, 40 (66.67%) had no family history of CVD and 10(50%) of those who had family history of CVD, the nature of relationship was paternal. In the control group, 38(63.33%) were Christians, 38 (63.33%) had no family history of CVD and 11(50%) of those who had family history of CVD, the nature of relationship was paternal.

The chi-square analysis showed that the investigator could not maintain homogeneity for religion but has maintained homogeneity for family history of CVD and nature of its relationship.

Table 4.1.4: Frequency and percentage distribution of demographic variables such as personal history of preeclampsia and diabetes mellitus (DM), chronicity of the disease and type of treatment in experimental and control group.

N = 120 (60+60)

S.No.	Demographic Variables	Experimental Group n=60		Control Group n=60		Chi-Square Value
		No.	%	No.	%	
10.	**If female, Personal history of preeclampsia**					χ^2= 0.05 p= 0.822 N.S
	Yes	13	37.14	12	32.43	
	No	22	62.86	25	67.56	
11.	**Personal history of DM**					χ^2=0.133 p= 0.714 N.S
	Yes	28	46.67	30	50.00	
	No	32	53.33	30	50.00	
12.	**If Yes, chronicity of the disease**					χ^2=0.598 p= 0.896 N.S
	<1 year	17	60.71	17	56.67	
	1 - 3 years	4	14.29	4	13.33	
	4 - 6 years	5	17.86	5	16.67	
	>6 years	2	7.14	4	13.33	
13.	**If yes, type of treatment**					-
	Regular	28	100.00	30	100.00	
	Irregular	0	0.00	0	0.00	

The above table 4.1.4 depicts the frequency and percentage distribution of demographic variables such as personal history of preeclampsia and DM, chronicity of the disease and type of treatment in experimental and control group.

In the experimental group, 22(62.86%) had no history of preeclampsia, 32 (53.33%) had no history of diabetes mellitus, 17(60.71%) had history of DM < 1 year, 28(100%) with history of DM are on regular treatment. In the control group, 25(65.76%) had no history of preeclampsia, 30 (50%) had history of diabetes mellitus, 17(56.67%) had history of DM < 1 year, 30(100%) with history of DM are on regular treatment.

The chi-square analysis shows that the investigator has maintained homogeneity for personal history of preeclampsia and DM, chronicity of the disease and type of treatment in experimental and control group.

Table 4.1.5: Frequency and percentage distribution of demographic variables such as any co-morbid illness, medications and BMI in experimental and control group.

N = 120 (60+60)

S.No.	Demographic Variables	Experimental Group n=60		Control Group n=60		Chi-Square Value
		No.	%	No.	%	
14.	**Any other co-morbid illness**					χ^2=1.176 p= 0.555 N.S
	Hypothyroidism	5	8.33	6	10.00	
	Migraine	1	1.67	3	5.00	
	None	54	90.00	51	85.00	
15.	**If yes, any medications**					χ^2=0.511 p= 0.474 N.S
	Eltroxin	5	83.33	6	66.67	
	Sibelium	1	16.67	3	33.33	
16.	**BMI**					$\chi^2 = 0$
	<18 kg/m^2	0	0.00	0	0.00	
	18 - 24 kg/m^2	18	30.00	18	30.00	
	>24 kg/m^2	42	70.00	42	70.00	

The above table 4.1.5 depicts the frequency and percentage distribution of demographic variables such as any co-morbid illness, medications and BMI in experimental and control group.

In the experimental group, 54(90%) had no history of any co-morbid illness, 5(83.33%) were on eltroxin and 42(70%) had BMI more than 24kg/m^2.

In the control group, 51(85%) had no history of any co-morbid illness, 6(66.67%) were on eltroxin and 42(70%) had BMI more than 24kg/m^2.

The chi-square analysis shows that the investigator has maintained homogeneity for co-morbid illness, medications and BMI in experimental and control group.

Table 4.1.6: Frequency and percentage distribution of demographic variables such as habit of eating junk or fried foods and doing exercise and its duration in experimental and control group.

N = 120 (60+60)

S.No	Demographic Variables	Experimental Group n=60		Control Group n=60		Chi-Square Value
		No.	%	No.	%	
	Personal Habits					
17.	**Habit of eating junk or fried foods**					χ^2=0.05 p=0.822 N.S
	Yes	47	78.33	48	80.00	
	No	13	21.67	12	20.00	
18.	**If yes, frequency of consumption**					
	Once a week	4	8.51	4	8.33	χ^2=0.001 p= 0.999 N.S
	Twice a week	1	2.13	1	2.08	
	Thrice or more in a week	42	89.36	43	89.58	
19.	**Habit of doing exercise**					χ^2 = 0.06 p= 0.802 N.S
	Yes	9	15.00	10	16.67	
	No	51	85.00	50	83.33	
20.	**If yes, frequency**					
	Everyday	7	77.78	8	80.00	χ^2=0.014 p= 0.905 N.S
	Once a week	0	0.00	0	0.00	
	Twice a week	0	0.00	0	0.00	
	Thrice in a week	2	22.22	2	20.00	

The above table 4.1.6 depicts the Frequency and percentage distribution of demographic variables such as habit of eating junk or fried foods and doing exercise and its duration in experimental and control group.

In the experimental group, 47(78.33%) had the habit of eating junk or fried foods, 42(89.36%) consumed junk or fried foods thrice or more in a week, 51(85%) had no habit of doing exercise and 7(77.78%) had the frequency of doing exercise every day. In the control group, 48(80%) had the habit of eating junk or fried foods, 43(89.58%) consumed junk or fried foods thrice or more in a week, 50(83.33%) had no habit of doing exercise and 8(80%) had the frequency of doing exercise every day. The chi-square analysis shows that the investigator has maintained homogeneity for habit of eating junk or fried foods and doing exercise and its duration in experimental and control group.

SECTION 4.2: ASSESSMENT OF EXISTING LEVEL OF RISK FOR DEVELOPING CVD AMONG TEACHERS IN THE EXPERIMENTAL AND CONTROL GROUP.

N = 120 (60+60)

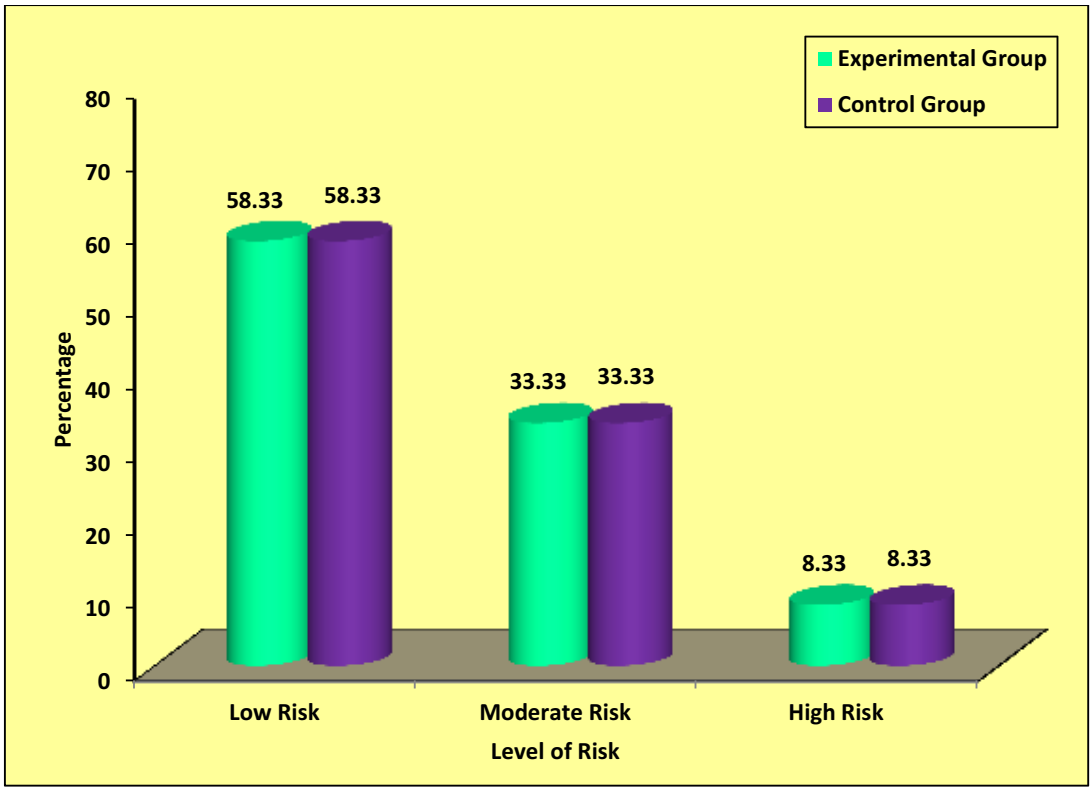


Fig 4.2.1: Percentage distribution of level of risk for CVD among teachers in the experimental and control group

The above figure 4.2.1 shows percentage distribution of level of risk for CVD among teachers in the experimental and control group.

In the experimental group, 35(58.33%) had low risk, 20 (33.33%) had moderate risk and 5(8.33%) had high risk of developing CVD. In the control group, 35(58.33%) had low risk, 20 (33.33%) had moderate risk and 5(8.33%) had high risk of developing CVD.

The results show that the investigator has maintained homogeneity for level of risk for CVD in both experimental and control group.

SECTION 4.3: ASSESSMENT OF PRE TEST AND POST TEST LEVEL OF KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CVD AMONG TEACHERS IN THE EXPERIMENTAL GROUP.

Table 4.3.1: Frequency and percentage distribution of pre test and post test level of knowledge regarding CVD risk factors among teachers in the experimental group.

N = 60

Level of Knowledge	Risk factors	Inadequate ≤50%)		Moderately Adequate (51 – 75%)		Adequate (>75%)	
		No.	%	No.	%	No.	%
Pre test	Non-modifiable	52	86.67	7	11.67	1	1.67
	Modifiable	38	63.33	22	36.67	0	0
	Overall	**48**	**80.0**	**12**	**20.0**	**0**	**0**
Post test	Non-modifiable	5	8.33	21	35.0	34	56.67
	Modifiable	0	0	23	38.33	37	61.67
	Overall	**0**	**0**	**30**	**50.0**	**30**	**50.0**

The above table 4.3.1 shows the frequency and percentage distribution of pre test and post test level of knowledge regarding CVD risk factors among teachers in the experimental group.

In the experimental group, 52(86.67%) had inadequate knowledge regarding non-modifiable risk factors, 38(63.33%) had inadequate knowledge regarding modifiable risk factors and overall 48(80%) had inadequate knowledge in the pretest. In the post test, 34(56.67%) had adequate knowledge regarding non-modifiable risk factors, 37(61.67%) had adequate knowledge regarding modifiable risk factors and overall 30(50%) had adequate knowledge and moderately adequate knowledge regarding CVD risk factors among teachers.

It shows that Multifactorial Intervention Package is effective in improving level of knowledge regarding CVD risk factors among teachers.

Table 4.3.2: Frequency and percentage distribution of pre test and post test level of knowledge regarding CVD risk factors among teachers in the control group.

N = 60

Level of Knowledge		Inadequate ≤50%)		Moderately Adequate (51 – 75%)		Adequate (>75%)	
		No.	**%**	**No.**	**%**	**No.**	**%**
Pre test	Non-modifiable	48	80.0	11	18.33	1	1.67
	Modifiable	39	65.0	21	35.0	0	0
	Overall	**52**	**86.67**	**8**	**13.33**	**0**	**0**
Post test	Non-modifiable	47	78.33	13	21.67	0	0
	Modifiable	45	75.0	14	23.33	1	1.67
	Overall	**51**	**85**	**9**	**15**	**0**	**0**

The above table 4.3.2 shows frequency and percentage distribution of pre test and post test level of knowledge regarding CVD risk factors among teachers in the control group.

In the control group, 48(80%) had inadequate knowledge regarding non-modifiable risk factors, 39(65%) had inadequate knowledge regarding modifiable risk factors and overall 52(86.67%) had inadequate knowledge in the pretest. In the post test, 47(78.33%) had inadequate knowledge regarding non-modifiable risk factors, 45(75%) had inadequate knowledge regarding modifiable risk factors and overall 51(85%) had inadequate knowledge regarding CVD risk factors among teachers in the control.

The results show that with routine information there is no increase in level of knowledge regarding CVD risk factors in the control group.

N = 60

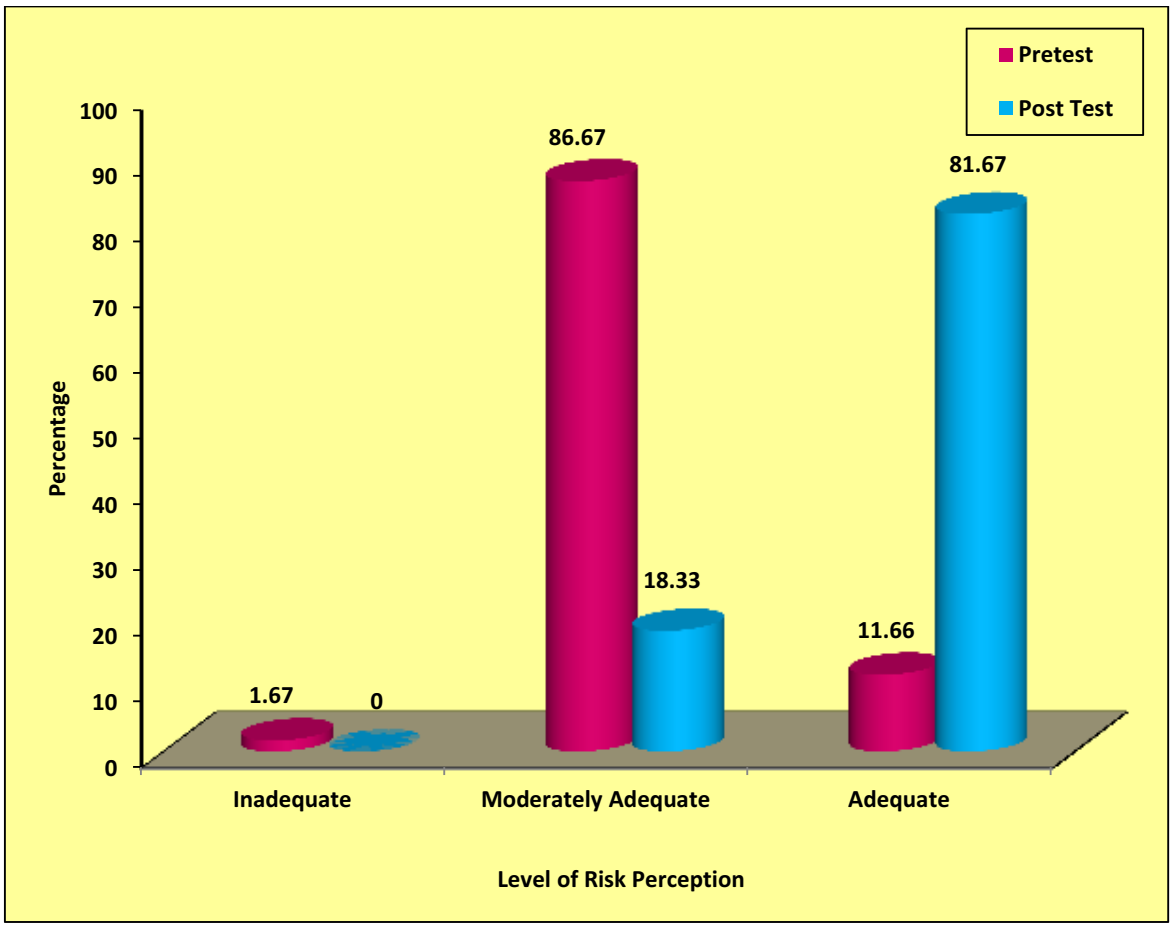


Fig 4.3.1: Percentage distribution of pretest and post test level of risk perception regarding prevention of CVD among teachers in the experimental group.

The above fig.4.3.1 shows percentage distribution of pretest and post test level of risk perception regarding prevention of CVD among teachers in the experimental group.

In the experimental group, in pretest 52(86.67%) had moderately adequate risk perception, 7(11.66%) had adequate risk perception and 1(1.67%) had inadequate risk perception. In the post test 49(81.67%) had adequate risk perception and 11(18.33%) had moderately adequate risk perception regarding prevention of CVD.

It shows that the multifactorial intervention package has improved the level of risk perception regarding prevention of CVD in the experimental group.

N = 60

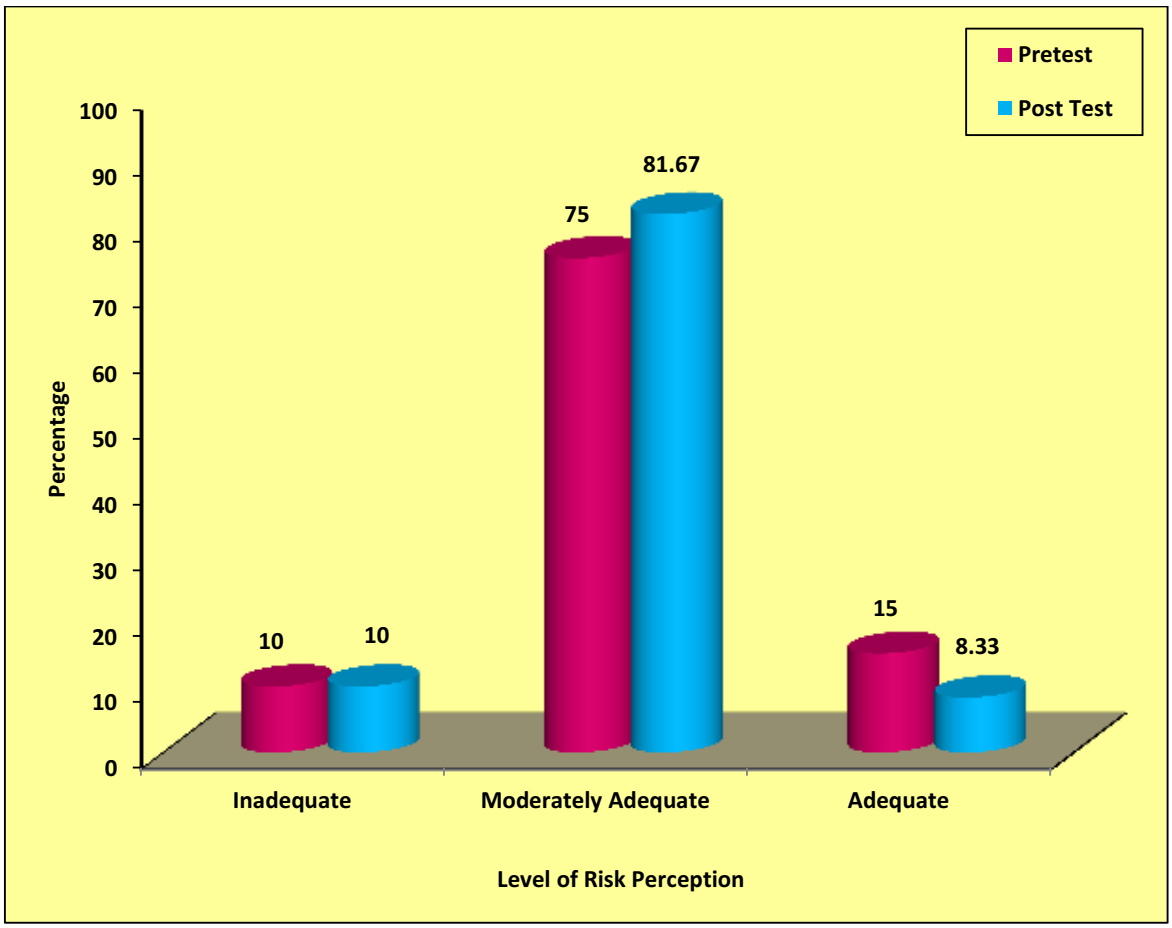


Fig.4.3.2 Percentage distribution of pretest and post test level of risk perception regarding prevention of CVD among teachers in the control group

The above fig 4.3.2 shows the percentage distribution of pretest and post test level of risk perception regarding prevention of CVD among teachers in the control group.

In the control group, in the pretest 45(75%) had moderately adequate risk perception, 9(15%) had adequate risk perception and 6(10%) had inadequate risk perception. In the post test 49(81.67%) had moderately adequate risk perception, 6(10%) had inadequate risk perception and 5(8.33%) had adequate risk perception regarding prevention of CVD among teachers.

It shows that majority of the teachers had moderate risk perception as they are curious to learn about there at risk status.

Table 4.3.3: Frequency and percentage distribution of pretest and post test level of readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the experimental group.

N = 60

Readiness to Change Lifestyle Behaviour		Inadequate ≤50%)		Moderately Adequate (51 – 75%)		Adequate (>75%)	
		No.	%	No.	%	No.	%
Pre test	Exercise	14	23.33	32	53.33	14	23.34
	Nutrition	13	21.67	22	36.67	25	41.67
	Personal Habits	4	6.67	26	43.33	30	50.0
	Overall	**6**	**10.0**	**31**	**51.67**	**23**	**38.33**
Post test	Exercise	0	0	36	60.0	24	40.0
	Nutrition	0	0	20	33.33	40	66.67
	Personal Habits	0	0	10	16.67	50	83.33
	Overall	**0**	**0**	**12**	**20.0**	**48**	**80.0**

The above table 4.3.3 shows the frequency and percentage distribution of pretest and post test level of readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the experimental group**.**

In the experimental group, in pretest, 32(53.33%) had moderately adequate readiness to change exercise behaviour, 25(41.67%) had adequate readiness to change nutrition behaviour, 30(50%) had adequate readiness to change personal habits and overall 31(51.57%) had moderately adequate readiness to change lifestyle behaviour.

In post test, 36(60%) had moderately adequate readiness to change exercise behaviour, 40(66.67%) had adequate readiness to change nutrition behaviour, 50(83.33%) had adequate readiness to change personal habits and overall 48(80%) had adequate readiness to change lifestyle behaviour.

It shows that the multifactorial intervention package is effective in bringing about a change in readiness to change lifestyle behaviour.

Table 4.3.4: Frequency and percentage distribution of pretest and post test level of readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the control group.

N = 60

Readiness to Change Lifestyle Behaviour		Inadequate ≤50%)		Moderately Adequate (51 – 75%)		Adequate (>75%)	
		No.	%	No.	%	No.	%
Pre test	Exercise	40	66.67	20	33.33	0	0
	Nutrition	16	26.67	41	68.33	3	5.0
	Personal Habits	0	0	52	86.67	8	13.33
	Overall	**12**	**20.0**	**47**	**78.33**	**1**	**1.67**
Post test	Exercise	34	56.67	26	43.33	0	0
	Nutrition	10	16.67	47	78.33	3	5.0
	Personal Habits	0	0	52	86.67	8	13.33
	Overall	**4**	**6.66**	**55**	**91.67**	**1**	**1.67**

The above table 4.3.4 shows the frequency and percentage distribution of pretest and post test level of readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the control group**.**

In the control group, in pretest, 40(66.67%) had inadequate readiness to change exercise behaviour, 41(68.33%) had moderately adequate readiness to change nutrition behaviour, 52(86.67%) had moderately adequate readiness to change personal habits and overall 47(78.33%) had moderately adequate readiness to change lifestyle behaviour, whereas in post test, 34(56.67%) had inadequate readiness to change exercise behaviour, 47(78.33%) had moderately adequate readiness to change nutrition behaviour, 52(86.67%) had moderately adequate readiness to change personal habits and overall 55(91.67%) had moderately adequate readiness to change lifestyle behaviour.

It shows that teachers in the control group have readiness to change lifestyle behaviour on their own as they are well educated.

SECTION 4.4: EFFECTIVENESS OF MULTI-FACTORIAL INTERVENTION PACKAGE ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR AMONG TEACHERS WITHIN AND BETWEEN EXPERIMENTAL AND CONTROL GROUP.

Table 4.4.1: Comparison of pretest and post test knowledge scores regarding CVD risk factors among teachers in the experimental and control group.

N = 120(60+60)

Knowledge	Pretest		Post Test		Paired 't' Value
	Mean	S.D	Mean	S.D	
Experimental Group n=60	7.81	2.95	15.50	1.62	t = 23.734 p = 0.000, S***
Control Group n=60	8.16	2.08	8.51	2.29	t = 2.460 p = 0.017, S*

***p<0.001, *p<0.05, S – Significant

The above table 4.4.1 shows comparison of pre & post test level of knowledge regarding CVD risk factors among teachers in the experimental and control group.

In the experimental group, the pretest mean score of knowledge was 7.81 with S.D 2.95 and the post test mean score was 15.50 with S.D 1.62. The calculated paired 't' value of t = 23.734 showed high statistical significance at p<0.001 level. This clearly indicates that the multifactorial intervention package administered to the teachers had significant effect and there was increase in the level of knowledge regarding CVD risk factors in the post test.

In the control group, the pretest mean score of knowledge was 8.16 with S.D 2.08 and the post test mean score was 8.51 with S.D 2.29. The calculated paired't' value of t = 2.460 showed low statistical significance at p<0.05 level. This clearly indicates that there was an increase in the level of knowledge regarding CVD risk factors in the post test as teachers are curious to learn.

Table 4.4.2: Comparison of pretest and post test risk perception scores regarding prevention of CVD among teachers in the experimental and control group.

N = 120(60+60)

Risk Perception	Pretest		Post Test		Paired 't' Value
	Mean	S.D	Mean	S.D	
Experimental Group n=60	26.45	3.62	33.18	3.05	t = 14.933 p = 0.000, S***
Control Group n=60	26.91	4.35	25.41	3.78	t = 5.847 p = 0.000, S***

***p<0.001, S – Significant

The above table 4.4.2 depicts the comparison of pre test and post test risk perception scores regarding prevention of CVD among teachers in the experimental and control group.

In the experimental group, the pretest mean score of risk perception was 26.45 with S.D 3.62 and the post test mean score was 33.18 with S.D 3.05. The calculated paired 't' value of t = 14.933 showed high statistical significance at p<0.001 level. This clearly indicates that the multifactorial intervention package administered to the teachers had significant change in the level of risk perception regarding prevention of CVD in the post test.

In the control group, the pretest mean score of risk perception was 26.91 with S.D 4.35 and the post test mean score was 25.41 with S.D 3.78. The calculated paired 't' value of t = 5.847 showed high statistical significance at p<0.001 level. The difference in the mean score shows there was reduction in the level of risk perception score in the post test and that teachers are curious to learn about there at risk status.

Table 4.4.3: Comparison of pretest and post test readiness to change lifestyle behaviour scores regarding prevention of CVD among teachers in the experimental and control group.

N = 60

Readiness to change lifestyle Behaviour	Pretest		Post Test		Paired 't' Value
	Mean	S.D	Mean	S.D	
Experimental group N=60	34.75	7.17	40.93	4.02	t = 7.693 p = 0.000, S***
Control group N=60	28.31	3.34	29.13	3.10	t = 3.055 p = 0.003, S**

***p<0.001, **p<0.01 S – Significant

The above table 4.4.3 shows the comparison of pretest and post test readiness to change lifestyle behaviour scores regarding prevention of CVD among teachers in the experimental and control group.

In the experimental group, the pretest mean score of readiness to change lifestyle behaviour was 34.75 with S.D 7.17 and the post test mean score was 40.93 with S.D 4.02. The calculated paired 't' value of t = 7.693 showed high statistical significance at p<0.001 level. This clearly indicates that the multifactorial intervention package regarding prevention of CVD administered to the teachers had significant improvement in the level of readiness to change lifestyle behaviour regarding prevention of CVD in the post test.

In the control group, the pretest mean score of readiness to change lifestyle behaviour was 28.31 with S.D 3.34 and the post test mean score was 29.13 with S.D 3.10. The calculated paired 't' value of t = 3.055 showed high statistical significance at p<0.01 level. This clearly indicates that the teachers had significant improvement in the level of readiness to change lifestyle behaviour regarding prevention of CVD as they are well educated.

Table 4.4.4: Comparison of post test knowledge scores regarding of CVD risk factors among teachers between the experimental and control group.

N = 120(60+60)

Knowledge	Mean	S.D	Unpaired 't' Value
Experimental Group	15.50	1.62	t = 19.248
Control Group	8.51	2.29	p = 0.000, S***

***p<0.001, S – Significant

The above table 4.4.4 shows the comparison of post test knowledge scores regarding CVD risk factors among teachers between the experimental and control group.

In the experimental group, the post mean score of knowledge was 15.50 with S.D 1.62 whereas in the control group, the post test mean score was 8.51 with S.D 2.29. The calculated unpaired 't' value of t = 19.248 showed high statistical significance at p<0.001 level.

This shows that the multifactorial intervention package administered to the teachers in the experimental group was effective in improving the level of knowledge in the post test than the teachers in the control group.

Table 4.4.5: Comparison of post test risk perception scores regarding prevention of CVD among teachers between the experimental and control group.

N = 120(60+60)

Risk Perception	Mean	S.D	Unpaired 't' Value
Experimental Group	33.18	3.05	t = 12.379
Control Group	25.41	3.78	p = 0.000, S***

***p<0.001, S – Significant

The above table 4.4.5 depicts the comparison of post test risk perception scores regarding prevention of CVD among teachers between the experimental and control group.

In the experimental group, the post test mean score of risk perception was 33.18 with S.D 3.05 whereas in the control group, the post test mean score was 25.41 with S.D 3.78. The calculated unpaired 't' value of t = 12.379 showed high statistical significance at p<0.001 level.

This clearly shows that the multifactorial intervention package administered to the teachers in the experimental group was effective in bringing about significant change in the level of risk perception in the post test than the teachers in the control group.

Table 4.4.6: Comparison of post test readiness to change lifestyle behaviour scores regarding prevention of CVD among teachers between the experimental and control group.

N = 120(60+60)

Readiness to change lifestyle behaviour	Mean	S.D	Unpaired 't' Value
Experimental Group	40.93	4.02	t = 17.980
Control Group	29.13	3.10	p = 0.000, S***

***p<0.001, S – Significant

The above table 4.4.6 depicts the comparison of post test readiness to change lifestyle behaviour scores regarding prevention of CVD among teachers between the experimental and control group.

In the experimental group, the post test mean score of readiness to change lifestyle behaviour was 40.3 with S.D 4.02 whereas in the control group, the post test mean score was 29.13 with S.D 3.10. The calculated unpaired't' value of t = 17.980 showed high statistical significance at p<0.001 level.

This clearly shows that the multifactorial intervention package administered to the teachers in the experimental group was effective in bringing significant improvement in the level of readiness to change lifestyle behaviour in the post test than the teachers in the control group.

SECTION 4.5: RELATIONSHIP BETWEEN KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CVD AMONG TEACHERS IN EXPERIMENTAL AND CONTROL GROUP.

Table 4.5.1: Correlation between post test knowledge, risk perception scores and readiness change lifestyle behaviour regarding prevention of CVD among teachers in the experimental group.

N = 60

Variables	Mean	S.D	'r' Value
Knowledge	15.50	1.62	r = 0.310
Risk perception	33.18	3.05	p = 0.016, S*
Knowledge	15.50	1.62	r = 0.314
Readiness to change lifestyle behavior	40.93	4.02	p = 0.014, S*
Risk Perception	33.18	3.05	r = 0.270
Readiness to change lifestyle behavior	40.93	4.02	p = 0.037, S*

*p<0.05, S – Significant

The above table 4.5.1 shows the correlation between post test knowledge, risk perception scores and readiness change behaviour regarding prevention of CVD among teachers.

In the experimental group, the post test mean score of knowledge was 15.50 with S.D 1.62, mean score of risk perception was 33.18 with S.D 3.05 and the mean score of readiness to change lifestyle behaviour was 40.93 with S.D 4.02. The correlation between knowledge, risk perception and readiness to change lifestyle behaviour revealed a positive correlation and the calculated Karl Pearson's Correlation value of r = 0.310, r = 0.314 and r = 0.270 showed low statistical significance at p<0.05 level.

The results reveal that when the level of knowledge increases the level of risk perception and readiness to change lifestyle behaviour also increases.

Table 4.5.2: Correlation between post test knowledge, risk perception scores and readiness change behaviour regarding prevention of CVD among teachers in the control group.

N = 60

Variables	Mean	S.D	'r' Value
Knowledge	8.51	2.29	r = 0.145
Risk perception	25.41	3.78	p = 0.270, N.S
Knowledge	8.51	2.29	r = -0.107
Readiness to change behavior	29.13	3.10	p = 0.414, N.S
Risk Perception	25.41	3.78	r = 0.157
Readiness to change behavior	29.13	3.10	p = 0.232, N.S

N.S – Not Significant

The above table 4.5.2 depicts the correlation between post test knowledge, risk perception scores and readiness change behaviour regarding prevention of CVD among teachers in the control group.

In the control group, the post test mean score of knowledge was 8.51 with S.D 2.29, mean score of risk perception was 25.41with S.D 3.78 and the mean score of readiness to change behaviour was 29.13 with S.D 3.10. The correlation between knowledge, risk perception and readiness to change behaviour revealed a positive and negative correlation and the calculated Karl Pearson's Correlation value of r = 0.145, r = -0.107 and r = 0.157 was not found to be statistically significant.

The analysis of data concluded that there is a positive correlation among all the 3 variables regarding prevention of CVD in the experimental group whereas no correlation was found in the control group.

SECTION 4.6: ASSOCIATION OF SELECTED DEMOGRAPHIC VARIABLES WITH THEIR MEAN DIFFERED SCORE OF KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CVD AMONG TEACHERS IN THE EXPERIMENTAL CONTROL GROUP.

N = 60

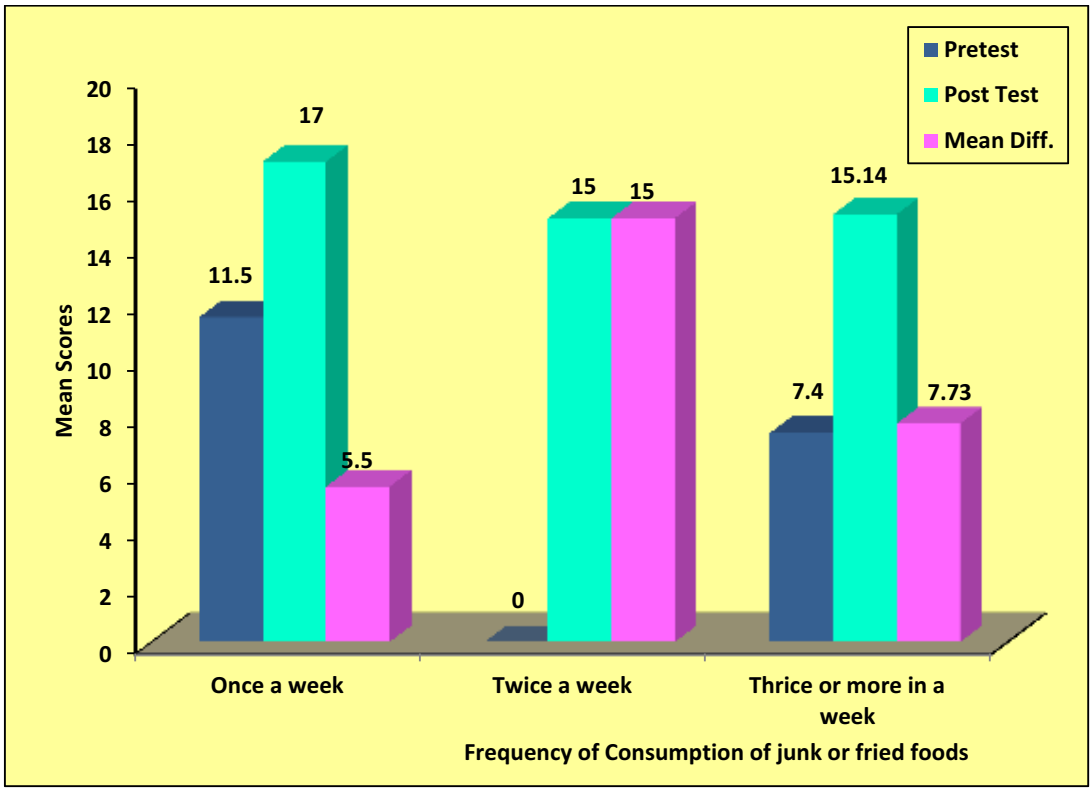


Fig 4.6.1 Association of frequency of consumption of junk or fried foods with mean differed knowledge score regarding CVD factors among teachers in the experimental group

The above fig 4.6.1 shows that in the experimental group, the teachers who consumed junk or fried foods thrice or more in a week had significant association of mean differed knowledge score regarding prevention of CVD at $p<0.01$ level. The other demographic variables had not shown statistically significant association with mean differed knowledge score regarding CVD risk factors among teachers in the experimental group.

N = 60

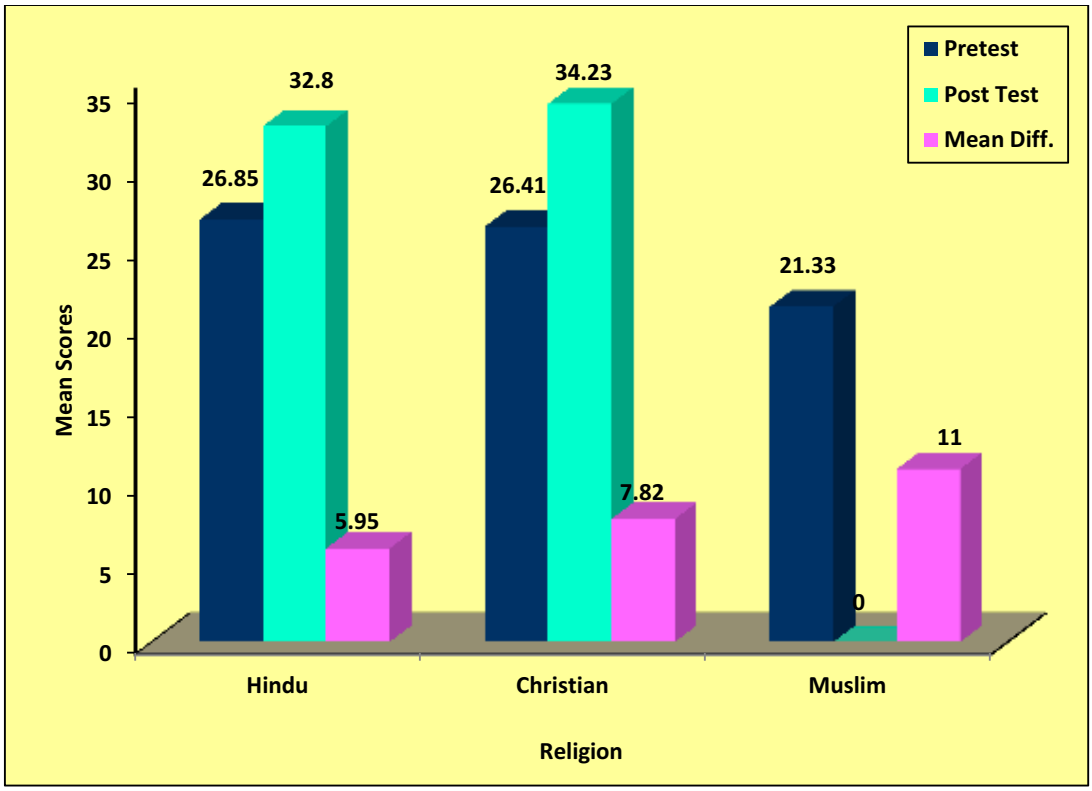


Fig 4.6.2 Association of religion with mean differed risk perception score regarding prevention of CVD among teachers in the experimental group.

The above fig 4.6.2 shows that in the experimental group, the teachers who were Muslims had statistically significant association with mean differed risk perception score regarding prevention of CVD at $p<0.05$ level. The other demographic variables had not shown any statistical significance with mean differed risk perception score in the experimental group.

N = 60

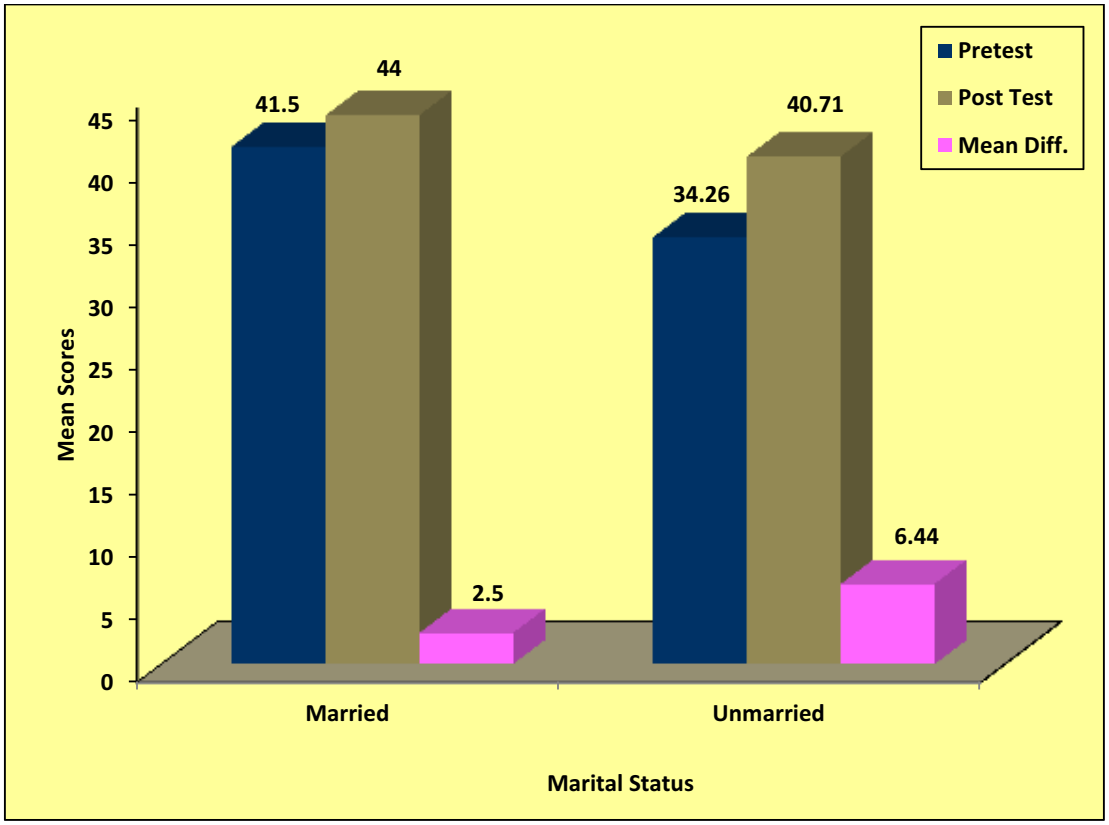


Fig 4.6.3: Association of marital status with mean differed readiness to change lifestyle behaviour score regarding prevention of CVD among teachers in the experimental group.

The above fig 4.6.3 shows that in the experimental group, the teachers who were unmarried had statistically significant association with mean differed risk perception score regarding prevention of CVD art $p<0.05$ level. The other demographic variables had not shown any statistical significance with mean differed readiness to change lifestyle behaviour in the experimental group.

N = 60

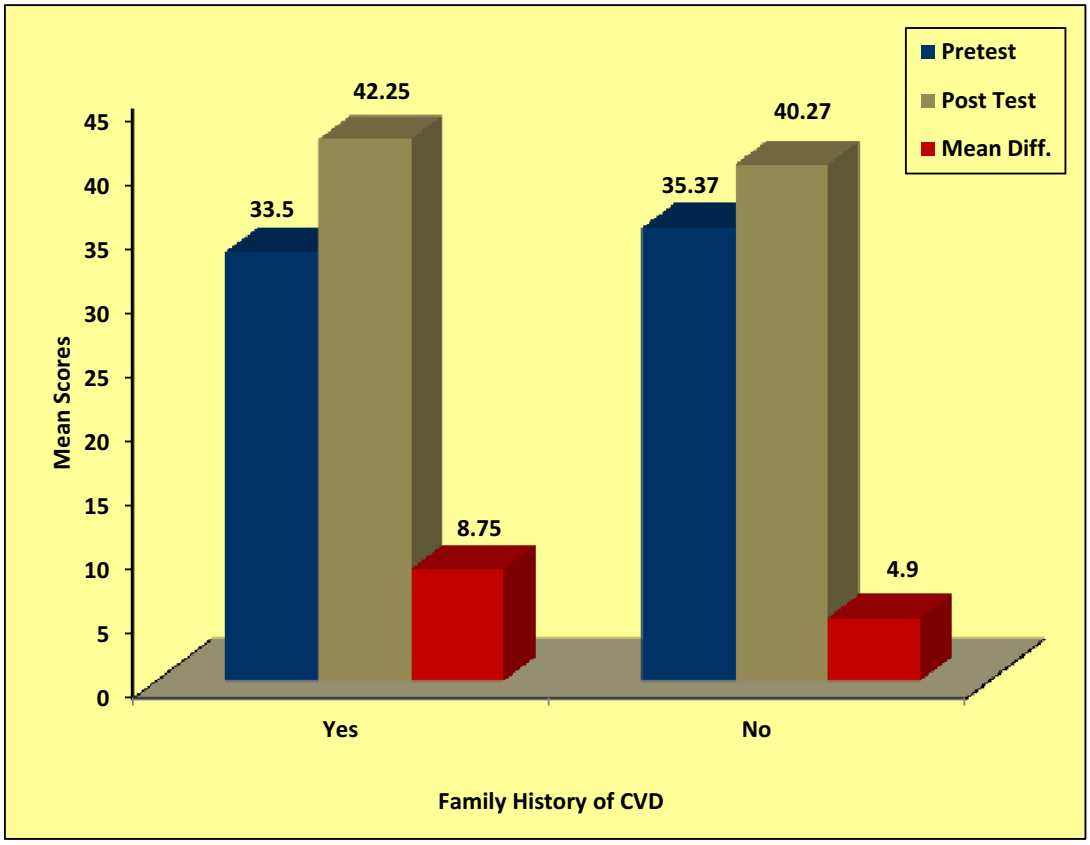


Fig 4.6.4: Association of family history of CVD with mean differed readiness to change behaviour score regarding prevention of CVD among teachers in the experimental group

The above fig 4.6.4 shows that in the experimental group, the teachers with family history of CVD had statistically significant association with mean differed readiness to change lifestyle behaviour score regarding prevention of CVD at $p<0.05$ level whereas the other demographic variables had no shown any statistically significant association.

CHAPTER 5

DISCUSSION

DISCUSSION

This chapter discusses the findings of the study, based on the objectives. The current study was undertaken to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers, at selected schools, Chennai.

5.1 The findings of the background variables of the teachers in the experimental and control group

The analysis findings of the tables 4.1.1 to 4.1.6 shows the frequency and percentage distribution of demographic variables of the teachers in the experimental and control group.

In the experimental group, 22(36.67%) were in the age group of 36 - 45 and 46 – 55 years, 35(58.33%) were females, 39(65%) were post graduates, 56(93.33%) were married, 36(60%) belonged to a nuclear family and 26(43.33%) had a family monthly income of Rs.20,000 - 30,000, 40(66.67%) were Hindus, 40 (66.67%) had no family history of CVD and 10(50%) of those who had family history of CVD, the nature of relationship was paternal, 47(78.33%) had no history of preeclampsia, 32 (53.33%) had no history of diabetes mellitus, 17(60.71%) had history of DM < 1 year, 28(100%) with history of DM are on regular treatment, 54(90%) had no history of any co-morbid illness and 5(83.33%) were on eltroxin, 42(70%) had BMI of more than 24 kg/m^2, 47(78.33%) had the habit of eating junk or fried foods, 42(89.36) consumed junk or fried foods thrice or more in a week, 51(85%) had no habit of doing exercise and 7(77.78%) had the frequency of doing exercise every day.

In the control group, 22(36.67%) were in the age group of 46 – 55 years, 37(61.67%) were females, 39(65%) were post graduates, 53(88.33%) were married, 40(66.67%) belonged to a nuclear family and 23(38.33%) had a family monthly income of Rs.20,000 - 30,000, 38(63.33%) were Christians, 38 (63.33%) had no family history of CVD and 11(50%) of those who had family history of CVD, the nature of relationship

was paternal, 48(80%) had no history of preeclampsia, 30 (50%) had history of diabetes mellitus, 17(56.67%) had history of DM < 1 year, 30(100%) with history of DM are on regular treatment, 51(85%) had no history of any co-morbid illness and 6(66.67%) were on eltroxin, 42(70%) had BMI of more than 24 kg/m^2, 48(80%) had the habit of eating junk or fried foods, 43(89.58%) consumed junk or fried foods thrice or more in a week, 50(83.33%) had no habit of doing exercise and 8(80%) had the frequency of doing exercise every day.

The above data was consistent with the study conducted by **Mohammad Hasan Lotfi et al (2009)** on a hospital based case-control study to investigate the role of social related risk factors on CAD in an urban area of East Delhi. The tools of enquiry were a questionnaire, physical examination and laboratory tests. Findings revealed majority of the males had college education, higher monthly income, semi or full professional occupations and majority of females were literate, employed and belonging to families with income levels of more than RS.8000. In addition, belonging to religion other than Hindus was another significant variable that was accounted for as risk for getting CAD.

Syed Esam Mahmood et al (2012) conducted a cross-sectional survey among adults aged ≥18 years (N = 373) to assess socio-demographic risk factors of CVD in rural Lucknow. Stratified random sampling was used. Prevalence rates of tobacco use, alcohol consumption, physical inactivity, low vegetable and fruit consumption, increased BMI and raised BP were determined. Findings revealed high prevalence of CV risk factors. The study concluded that this information is useful for designing community based interventions to reduce risk factors in the population.

5.2 The first objective of the study was to assess the existing level of risk for developing Cardiovascular Disease (CVD).

The assessment of level of risk for developing CVD among teachers was assessed using modified Framingham risk assessment tool.

Findings revealed that, in experimental group, 35(58.33%) had low risk, 20 (33.33%) had moderate risk and 5(8.33%) had high risk of developing CVD. In control group, 35(58.33%) had low risk, 20 (33.33%) had moderate risk and 5(8.33%) had high

risk of developing CVD. The teachers who had high risk were referred to the nearest tertiary care hospital.

The above data was consistent with the study conducted by **Hepsi Rachel Charles (2014)** on assessment of CV risk factors among 169 people attending cardiac exhibition at selected hospital, Salem by using non probability convenience sampling technique. Health related data was collected. Findings were 71.59% were at mild risk, 23.07% at moderate risk and 5.32% at severe risk for developing CVD. The results showed that demographic variables like age, educational status, nature of job and monthly income and health related variables like BP and family history (FH) of heart diseases and BMI had significant association with CV factors. Hence research hypothesis was retained at $p<0.05$ level.

Nahla Khamis Ibrahim et al (2014) conducted a cross-sectional study to estimate the prevalence of risk factors of CHD among 214 medical students selected using multistage stratified random sample method at King Abdulaziz University, Jeddah. Data was collected through an interviewing questionnaire, measurements and laboratory investigations. The commonest risk factors were daily intake of high fat diet (73.4%), physical inactivity (57.9%), obesity (31.2%), and smoking (2.8%). Framingham Risk Score revealed that CHD risk percent in thirty-years among all students was 10.7%, 2.3% and 0.5% for mild, moderate and severe risk, respectively. The study concluded that programs to raise awareness should be initiated.

5.3 The second objective was to assess the pretest and post test level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the experimental and control group

The analysis of pre test level of knowledge of CVD risk factors in the experimental group showed that majority of teachers 48(80%) had inadequate level of knowledge and 12 (20%) had moderately adequate level of knowledge on the prevention of CVD. The post test level of knowledge revealed an improvement with 30(50%) showing adequate level of knowledge and 30(50%) with moderately adequate level of knowledge.

The analysis of pre-test level of knowledge regarding CVD risk factors in the control group revealed that 52 (86.67%) had inadequate level of knowledge, 8 (13.33%) had moderately adequate level of knowledge in the pre test. It was noted that in the post test level of knowledge, 51(85%) had inadequate level of knowledge and 9(15%) had moderately adequate level of knowledge regarding CVD risk factors.

The analysis of pre test level of risk perception in the experimental group revealed that 52(86.67%) had moderately adequate level of risk perception and 7(11.66%) had adequate level of risk perception. With regard to the post test score, 49(81.67%) had adequate level of risk perception and 11(18.33) had moderately adequate level of risk perception.

The analysis of pre test level of risk perception in the control group revealed that 45(75%) had moderately adequate level of risk perception and 9(15%) had adequate level of risk perception. With regard to the post test level score, 49(81.67%) had moderately adequate level of risk perception and 5(8.33) had adequate level of risk perception.

The analysis of the pre test level of readiness to change lifestyle behaviour in the experimental group showed that 31(51.67%) had moderately adequate level of readiness to change lifestyle behaviour. With regard to the post test score 48(80%) had adequate level of readiness to change lifestyle behaviour.

The analysis of pre test level of readiness to change lifestyle behaviour in the control group revealed that 47(78.33%) had moderately adequate level of readiness to change lifestyle behaviour. With regard to the post test score 55(91.67%) had moderately adequate level of readiness to change lifestyle behaviour.

The above findings were consistent with study conducted by **Patricia Cioe A (2012),** a prospective observational cohort; cross-sectional design to describe CV risk factor knowledge and risk perception in 130 HIV infected adults by convenient sampling from 2 hospital-based HIV clinics in Massachusetts by direct interview. Findings revealed that HIV-infected adults are at increased risk for CVD. Despite having a fair level of risk factor knowledge, knowledge did not influence risk perception for CVD.

The study concluded that further research to improve risk perception is necessary and to develop innovative interventions that reduce CVD risk is needed for this population.

Omar Saeed et al (2009) conducted a hospital-based, cross sectional study to assess the prevalence of Coronary Atherosclerotic Heart Disease (CASHD) at All India Institute of Medical Sciences, New Delhi among 217parcticipants recruited from patient waiting areas in the emergency room provided with standardized questionnaires to assess knowledge of modifiable risk factors. Findings revealed 41% had a good level of knowledge. It was concluded that educational interventions can be effectively targeted and implemented as primary and secondary prevention strategies to reduce the burden of CASHD in India.

5.4 The third objective of the study was to assess the effectiveness of multifactorial intervention package on the knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers in experimental and control group.

The analysis shows that the post test mean score of knowledge was 15.50 with S.D 1.62 in the experimental group and in control group was 8.51 with S.D of 2.29. The calculated unpaired 't' value was 19.428 was statistically significant at $p<0.001$ level. This clearly shows that the multifactorial intervention package administered to the teachers in the experimental group had significant improvement in the level of knowledge regarding CVD risk factors in the post test than the teachers in the control group.

The comparison of post test mean scores of risk perception was 33.18 with S.D of 3.05 in the experimental group and 25.41 with S.D 3.78 in control group. The calculated unpaired 't' value 12.379 was statistically significant at $p<0.001$ level. This clearly shows that the multifactorial intervention package administered to the teachers in the experimental group had significant change in the level of risk perception in the post test than the teachers in the control group.

The analysis of findings revealed a post test mean score of readiness to change lifestyle behaviour in experimental group was 40.93 with S.D 4.02 in the experimental group and 29.13 with S.D of 3.10 in the control group. The calculated unpaired 't' value

of t = 17.980 showed high statistical significance at p <0.001 level. This clearly shows that the multi-factorial intervention package administered to the teachers in the experimental group had significant improvement in the level of readiness to change lifestyle behaviour in the post test than the teachers in the control group.

The above data were consistent with the study conducted by **Rosediani Muhamad, Ranimah Yahya, Harmy Mohamed Yusoff (2012)** conducted a cross sectional study to determine the level of KAP on CVD among 448 women (25-65 years) from 7 out of 14 clinics selected via systematic random sampling by 1:2 ratio based on clinic attendance lists. A validated KAP questionnaire was given to be completed within 15 minutes. Findings revealed KAP score were 55.6%, 55.1 % and 51.1% respectively. The study concluded a structured educational programme and utilization of available CVD guidelines should be reinforced as a better preventive strategy to overcome this problem.

Pichayapinayo P et al (2012) conducted a quasi-experimental study to investigate effect of a personal health booklet on knowledge, self efficacy and health behaviours among 204 thai population at risk for CVD in a primary care unit who were selected by random sampling method. The knowledge score was significantly decreased although self efficacy was increased over a period of time in the experimental group. However except of the fig of sweet / cookies consumption, the mean score of healthy behaviours were not improved in experimental group when compared to control group.

By integrating Wiedenbach's Helping Art of Clinical Nursing Theory and J.W.Kenny's Open System Model the investigator was able to incorporate more concepts in the study, this helped in accomplishing of the study in an organized manner. The input by the investigator is the identifying the need for help, using assessment tools. The throughput is the ministering the need for help, following which, the need for help is validated as the output. The positive outputs of acquiring adequate knowledge, favourable self care behaviour and adequate skill was enhanced and negative outputs such as inadequate knowledge, unfavourable self care behaviour and inadequate skill were reinforced by the investigator.

Hence, the Null Hypothesis NH_1 stated earlier that **"there is no significant effect of Multi-factorial Intervention package on the level of knowledge, risk perception and readiness to change lifestyle behaviour regarding the prevention of CVD was rejected for the experimental group and accepted for the control group".**

5.6 The fifth objective was to correlate the post test level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the experimental and control group

The correlation between the experimental group post test mean knowledge score of 15.50 and S.D 1.62 with the mean level of risk perception score 33.18 with S.D 3.05 revealed the calculated Karl Pearson 'r' value of 0.310 which showed low statistical significance at $p<0.05$ level. This showed that there was a positive correlation between the level of knowledge and risk perception in the experimental group.

The post test knowledge score of 15.50 and S.D 1.62 when tested for correlation with the post test mean score of readiness to change lifestyle behaviour 40.93 and S.D 4.02, revealed the Karl Pearson's correlation value of 'r' = 0.314, which showed a positive correlation between knowledge and risk perception and low statistical significance at $p<0.05$ level. This emphasizes that knowledge on CVD risk factors is essential for improvement in level of readiness to change lifestyle behaviour.

Analysis of the post-test mean level of risk perception score of 33.18 and S.D 3.05 in the experimental group with post test mean score of readiness to change lifestyle behaviour 40.93 and S.D 4.02, showed, the Karl Pearson's correlation value of 'r' = 0.270, which revealed a positive correlation between risk perception and readiness to change lifestyle behaviour and also showed low statistical significance at $p<0.05$ level. This clearly indicates that when the risk perception increases, the readiness to change lifestyle behaviour increases.

Thus the Null Hypothesis NH_2 that was stated before **"there is no significant relationship between the post-test level of knowledge, risk perception and readiness to change lifestyle behaviour was rejected for the experimental group and accepted for the control group"**

5.7 The sixth objective was to associate the selected demographic variables with mean differed level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers in the experimental and control group.

The analysis of findings to associate the demographic variables such as age, gender, educational qualification, marital status, type of family, family monthly income, religion, family history of CVD and nature of relationship, personal history of preeclampsia, personal history of diabetes mellitus, chronicity of the disease, type of treatment, any other co-morbid illness and medications, BMI, habit of consumption of junk or fried foods and its frequency, habit of doing exercise and its frequency was done using ANOVA.

The demographic variable like frequency of consumption of junk foods showed moderately statistically significant association with mean improvement score of knowledge at $p<0.01$ level, among teachers and other demographic variables did not show statistically significant association with mean improvement score of knowledge regarding prevention of CVD among teachers.

The demographic variable religion showed low statistically significant association with mean improvement score of risk perception at $p<0.05$ level, among teachers and other demographic variables did not show statistically significant association with mean improvement score of risk perception regarding prevention of CVD among teachers.

The demographic variable marital status and family history of CVD showed low statistically significant association with mean improvement score of readiness to change lifestyle behaviour at $p<0.05$ level, among teachers and other demographic variables did not show statistically significant association with mean improvement score of readiness to change lifestyle behaviour regarding prevention of CVD among teachers.

The above data is consistent with the study conducted by **Ananya Tina Banerjee, Patricia Strachan H, Michael Boyle H, Sonia Anand S, Mark Oremus (2014)**, a qualitative study to explain findings of Canadian Community Health Survey (CCHS) 4.1 data showing older persons who attend religious services more than once a

week, compared to persons who do not attend at all, have lower prevalence of CHD and high BP. 12 semi-structured interviews with ordained pastors and 3 focus groups with older parishioners from churches were conducted. All participants claimed that religious service attendance (RSA) enhances mental health, provides social support and activities and promotes healthy lifestyle behaviours that lower CHD risk, thereby explaining the inverse association between RSA and the prevalence of adverse health outcomes found in the CCHS 4.1 data.

Claassen L, Henneman L, Kindt I, Marteau T M, Timmermans D R (2010) carried out a cross sectional questionnaire study to assess perceived risk and representations of CVD and preventive behaviour of people diagnosed with Familial Hypercholesterolemia by DNA testing (N = 81) in Amsterdam, Netherlands. Findings revealed participants perceived their own CVD risk as being relatively low. FH of CVD was associated with both risk perception and the adoption of a healthy lifestyle. The study concluded that health professionals should be aware that people may underestimate CVD risk, and should stress how behaviour change can reduce risk.

Kozo Tanno et al (2013) conducted a 5-year prospective cohort study to assess the association of marital status with mortality in 1064 (30 years or older) haemodialysis patients in Northern Japan. Marital status was classified into 3 groups: married, single and divorced/widowed. Results showed single and divorced/widowed patients had higher risks than married patients for mortality from mortality from CVD. The study concluded that single status is a significant predictor for CVD mortality and that divorced/widowed status is a significant predictor for CVD mortality in haemodialysis patients.

Hence the NH_3 stated before that **"there is no significant association of selected demographic variables with the mean differed level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD in the experimental and control group"** was rejected for the selected demographic variables such as frequency of consumption of junk foods with mean differed level of knowledge, religion with mean differed level of risk perception, marital status and family history of CVD with mean differed level of readiness to change lifestyle behaviour and accepted for all other demographic variables in the experimental group and accepted for the control group.

CHAPTER 6

SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

6.1 SUMMARY

Cardiovascular disease (CVD) is a collective term for diseases of the heart and blood vessels. Many of these diseases are called "lifestyle diseases" because they develop over time and are related to a person's exercise habits, diet, whether they smoke, and other lifestyle choices a person makes. CVD is a major cause of disability and premature death throughout the world. Acute coronary events (heart attacks) and cerebrovascular events (strokes) frequently occur suddenly, and are often fatal before medical care can be given. Risk factor modification can reduce clinical events and premature death in people with established cardiovascular disease as well as in those who are at high cardiovascular risk due to one or more risk factors.

It is estimated that 90% of CVD is preventable. Prevention of atherosclerosis is by decreasing risk factors through: healthy eating, exercise, avoidance of tobacco smoke and limiting alcohol intake.

The purpose of the study was to create awareness among the teachers who are at risk of developing CVD, since it poses a global challenge in the 21st century.

The objectives of the study were

1. To assess the existing level of risk for developing CVD.
2. To assess the pretest & post test level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among the experimental & control group.
3. To determine the effectiveness of MIP on level of knowledge, risk perception and readiness to change lifestyle behaviour among teachers at risk for CVD in experimental and control group
4. To correlate the post test level of knowledge, risk perception score and readiness to change lifestyle behaviour among experimental and control group.
5. To associate the selected demographic variables with mean differed knowledge score, risk perception score with readiness to change lifestyle behaviour score

among teachers regarding prevention of CVD in the experimental and control group.

The study was based on the assumptions that,

1. Teachers may have some level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD.
2. Multifactorial intervention package may enhance their level of knowledge, risk perception and also influence the readiness to change lifestyle behaviour regarding prevention of CVD.

The null hypotheses formulated were,

NH_1: There is no significant effect of Multifactorial intervention package on the level of knowledge, risk perception and readiness to change lifestyle behaviour in the experimental and control group at $p<0.05$ level.

NH_2: There is no significant relationship between the post test level of knowledge, risk perception and readiness to change lifestyle behaviour score among experimental & control group at $p< 0.05$ level.

NH_3: There is no significant association between selected demographic variables with the mean differed knowledge score, risk perception score and readiness to change lifestyle behaviour score regarding prevention of CVD in the experimental & control group at $p <0.05$ level.

The study was strongly rooted on the review of literature, professional experience and expert guidance from the field of Medical-Surgical Nursing. It also provided a platform to integrate theories into a conceptual framework aiding to design the methodology and in developing the tool for data collection.

In order to provide a bird's eye view regarding the relation of various aspects of the study, the investigator had adopted and integrated a framework based on **Wiedenbach's helping art of clinical nursing theory** and **J.W. Kenny's open system model.**

The researcher adopted a quasi experimental, non equivalent pre test and post test study design to assess the effectiveness of Multifactorial Intervention Package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers, at selected schools, Chennai. Purposive sampling technique was used to select 120 samples.

The tool constructed had 2 parts. Firstly **Data collection tool,** which consisted of 5 parts. Part I consisted of modified Framingham risk assessment tool, which contained 12 questions (yes/no type). Part II consisted of, structured questionnaire to assess the demographic and clinical data. Part III consisted of structured self administered questionnaire to assess the knowledge level of teachers regarding CVD risk factors consisting of 20 questions. Part IV consisted of 4 point likert risk perception scale to assess the risk perception. This consists of 10 items positively and negatively worded scoring from 1-4. Part V consisted of 5 point likert readiness to change lifestyle behaviour scale to assess readiness to change lifestyle behaviour. It consisted of 10 positively worded statements with scoring from 1-5.

Secondly, **the interventional tool** prepared by the investigator is Multi-factorial Intervention package including : Information transfer in form of lecture cum discussion on definition of selected cardiovascular diseases (Hypertension, Heart failure, Coronary Artery Disease, Myocardial Infarction, Peripheral Vascular Disease) causes, risk factors, manifestations, possible complications and preventive measures with the aid of a power point presentation, Video show on “Heart Healthy Exercises” exercises which shows the warm up exercises, stretches and cardio work out exercises and reinforcement on prevention of CVD through a booklet which contains information on definition, causes, risk factors, manifestations, possible complications and preventive measures.

The content validity of the data collection tool was obtained from 1 cardiologist, 4 Medical-Surgical Nursing experts and 1 Physiotherapist. The reliability of the tool was established by split half method for the modified Framingham risk assessment tool, test-retest method for knowledge questionnaire and split half method for 4 point likert risk perception scale and 5 point likert readiness to change lifestyle behaviour scale. The feasibility and practicability of the study was analysed by conducting a pilot study at Ebenezer Marcus Matriculation Higher Secondary School, Pudur, and Emmanuel

Methodist Matriculation Higher Secondary School, Pudur and the tool was found practicable to implement in the main study.

The data collection for the main study was done at the following schools: Sethu Bhaskara Matriculation Higher Secondary School, Pudur, Good Shepherd Matriculation Higher Secondary School, Pattabiram, Infant Matriculation School, Pattabiram, Immanuel Matriculation Higher Secondary School, Pattabiram and Ebenezer Matriculation Higher Secondary School, Korattur. Purposive sampling technique was used and the sample size was 120 teachers who fulfilled the sample selection criteria. Ethical considerations were adhered throughout the study.

The data collected was analysed and interpreted based on the objectives and null hypotheses using descriptive and inferential statistics. The findings revealed that there was a significant improvement in the level of knowledge, risk perception and readiness to change lifestyle behaviour after being provided with the multi-factorial intervention package.

The major findings of the study revealed that,

The analysis regarding level of risk of developing CVD showed in experimental group, 35(58.33%) had low risk, 20 (33.33%) had moderate risk and 5(8.33%) had high risk whereas in the control group, 35(58.33%) had low risk, 20 (33.33%) had moderate risk and 5(8.33%) had high risk.

The analysis of knowledge of CVD risk factors revealed that in the experimental group, in the pre test 48(80%) had inadequate knowledge regarding CVD risk factors whereas in the post test 30(50%) had adequate knowledge and moderately adequate knowledge respectively. In the control group, 52(86.67%) had inadequate knowledge in the pretest while in the post test 51(85%) had inadequate knowledge.

The analysis of level of risk perception revealed in the experimental group, in the pre test majority 52(86.67%) had moderately adequate level of risk perception and in post test majority 49(81.67%) had adequate level of risk perception. Whereas in control group the pre test assessment showed that majority 45(75%) had moderately adequate

level of risk perception and the post test assessment revealed that majority had 49(81.67%) had moderately adequate level of risk perception

The analysis of readiness to change lifestyle behaviour revealed in the experimental group, in the pre test 31(51.67%) had moderately adequate readiness to change lifestyle behaviour whereas in the post test majority 48(80%) had adequate readiness to change lifestyle behaviour regarding prevention of CVD. In the control group, 47(78.33%) had moderately adequate readiness to change lifestyle behaviour in the pre test whereas in the post test, 55(91.67%) had moderately adequate readiness to change lifestyle behaviour regarding prevention of CVD.

The analysis of findings to assess the effectiveness of multifactorial intervention package among teachers were: In the experimental group, the post test mean score of knowledge was 15.50 with S.D 1.62 whereas in the control group, post test mean score of knowledge was 8.51 with S.D 2.29. The calculated unpaired 't' value of t = 19.248 was found to be highly statistically significant at $p<0.001$ level. This clearly indicates that the multifactorial intervention package regarding prevention of cardiovascular disease administered to the teachers in the experimental group had impacted a significant improvement in their post test level of knowledge than the teachers in the control group.

In the experimental group, the post test mean score of risk perception was 33.18 with S.D 3.05 and the post test mean score of risk perception in the control group was 25.41 with S.D 3.78. The calculated unpaired 't' value of t = 12.379 was found to be highly statistically significant at $p<0.001$ level.

This clearly indicates that the multifactorial intervention package regarding prevention of cardiovascular disease administered to the teachers in the experimental group had significant improvement in their post test level of risk perception than the teachers in the control group.

In the experimental group, the post test mean score of readiness to change lifestyle behaviour was 40.93 with S.D 4.02 and the post test mean score of readiness to change lifestyle behaviour in the control group was 29.13 with S.D 3.10. The calculated

unpaired ‘t’ value of t = 17.980 was found to be highly statistically significant at $p<0.001$ level.

This clearly indicates that the multifactorial intervention package regarding prevention of cardiovascular disease administered to the teachers in the experimental group had significant improvement in their post test level of readiness to change lifestyle behaviour than the teachers in the control group.

The correlation between knowledge, risk perception and readiness to change lifestyle behaviour in the experimental group, gave a post test mean level of knowledge as 15.50 and S.D 1.62, post test mean level of risk perception as 33.18 with S.D 3.05 and the mean level of readiness to change self-care behaviour was 40.93 with S.D of 4.02. The calculated Karl Pearson’s correlation of r = 0.310, r = 0.314 and r = 0.270 showed low statistical significance at $p<0.05$ level. This clearly indicates that when the level of knowledge increases, the level of risk perception and readiness to change lifestyle behaviour also increases.

In the control group, the post test mean level of knowledge was 8.51 with S.D 2.29, the post test mean level of risk perception was 25.41 with S.D 3.78 and the post test mean score of readiness to change lifestyle behaviour was 29.13 with S.D 3.10. When computed, the correlation between knowledge, risk perception and readiness to change lifestyle behaviour revealed a positive and negative correlation and the calculated Karl Pearson’s correlation value of r = 0.145, r = -0.107 and r = 0.157. This emphasizes that knowledge on prevention of CVD is essential for improvement in level of risk perception and readiness to change lifestyle behaviour.

. A moderately significant level of association ($p<0.05$ level) was identified between the demographic variables frequency of consumption of junk foods and level of knowledge, religion and risk perception and marital status and family history of cardiovascular disease with readiness to change lifestyle behaviour in the experimental group.

6.2 CONCLUSION

The current study assessed the effectiveness of multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers, at selected schools, Chennai.

The study revealed that there was a significant improvement in the level of knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD following the administration of MIP between experimental group when compare to the control group, thereby proving the effectiveness of MIP.

6.3 IMPLICATIONS

The investigator has drawn the following implications from the study in the field of nursing practice, nursing education, nursing administration and nursing research.

6.3.1 Nursing Practice

Nurses play a vital role in educating the teachers and to improve their knowledge, risk perception and readiness to change lifestyle in relation to prevention of CVD.

Nurses have a professional responsibility in educating teachers that encompass teaching, counselling and clinical roles. This can be facilitated by motivating the nurses to:

- Utilize the findings of the study to plan regular periodic health screenings and education sessions in hospitals and community health centers regarding CVD and its prevention because knowledge regarding prevention aids in change in risk perception and readiness to change lifestyle behaviour.
- Implement mass educational programme on awareness of CVD using multi-factorial intervention package. Teach the public to engage in health promotion and health check up to prevent complications
- Assess the client's readiness to change lifestyle behavior and correct and reinforce healthy behavior and lifestyle as appropriate.
- Demonstration of heart healthy exercises and skill development in performing them.

6.3.2 Nursing Education

- The results of the study can be oriented and issued to the staff, students and public to update their knowledge.
- The nurse educator should be competent enough to train her students to assess the existing risk factors of CVD and administer preventive measures
- The nurse must educate the client and significant others on the prevention of CVD, as to bring about a desirable change in lifestyle behavior.
- Incorporate the findings of the study to plan teaching awareness programmes for school teachers and general public yearly once.
- Using the booklet as a model other innovative methods of A.V aids can be prepared to educate the clients.

6.3.3 Nursing Administration

- Nurses are in prime position to make use of many opportunities to encourage and influence patients and the public to be involved in their own health and make use of the screening programmes available.
- Nurse administrator can recommend the Chief Educational Officer to organize awareness programmes regarding prevention of CVD among teachers
- Nurse administrator appointed in hospitals can have their extended role in counseling the patients attending cardiac and diabetic OPDs
- Nurse administrators can plan and implement a protocol for nurses to aid in enhancing the knowledge in prevention of CVD among at risk clients as a part of routine hospital care.
- Nurse administrators can plan for awareness programmes and reach-out to a larger group of population.

6.3.4 Nursing Research

- Dissemination of findings of the study through conferences, seminars and by publishing in journals and websites.
- Expand the research in studying a larger population.
- Encourage the staff nurses to implement the research findings in daily care of at risk clients

6.4 RECOMMENDATIONS

- The nurse investigator encourages the use of booklet by teachers in the selected hospitals
- Similar study in a larger population.
- Awareness programmes on CVD could be conducted at community level.
- Importance of smoking cessation should be enforced among smokers with at-risk conditions and otherwise.
- OPDs should be equipped with booklets for creating awareness among general population.
- Nursing assessment chart used in study can be adapted to assess the level of risk for CVD.
- The Investigator recommends the multi-factorial intervention package as an ideal tool to be followed in the hospitals, industries and community.
- The investigator insists the students of Omayal Achi College of Nursing to utilize the Multi-factorial Intervention Package in Omayal Achi Community Health Centre, Sir Ivan Stedeford Hospital and other affiliated hospitals of Omayal Achi College of Nursing.
- The Investigator recommends the teachers to communicate the gained information to the younger generation (school students) about preventive aspects of CVD
- The investigator can motivate the teachers to approach students for health education regarding CVD in various settings.
- A similar study can be carried out in hospital setting specially in diabetic OPDs and among relatives of patients with CVD
- A comparative study on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of CVD among teachers between government and private schools
- A similar study can be carried out to college and school students, industries and information technology companies

6.5 LIMITATIONS

- Investigator found difficulty in getting setting permission

6.6 PLAN FOR RESEARCH DISSEMINATION

The research findings will be disseminated through podium presentations both in National and International Conferences and published in journals.

6.7 PLAN FOR RESEARCH UTILIZATION

The research findings will be incorporated in schools, colleges, work-sites, hospitals and health centres.

REFERENCES

REFERENCES

BOOKS:

Agarwal, B. L (2011). *Textbook of Statistics*. New Delhi: CBS publishers and distributors.

Bala. (2007). Fundamentals of Biostatistics. New Delhi: Anne publications.

Basavanthappa, B.T. (2007). *Nursing Research*. Bangalore: Jaypee brothers

Basavanthappa, B.T. (2008). *Nursing Theories*. Bangalore: Jaypee brothers.

Braunwald , Eugene et.al (2006). *Harrison's Principles of Internal Medicine.* New York: Mc Graw Hill publishers.

Burns, Nancy. (2009). *The practice of nursing research***.** Missouri: Saunders publications.

Christensen, Barbara L., & Kockrow, Elaine. (1995). *Foundation of Nursing*. St. Louis: Mosby Company.

Coachman, Wendy., & Dawson, Jane. (2005). *Nursing and Health Care Research a Practical Guide*. London: RCN publishing company Ltd.

Constance, Hieule J., & Craven, Ruth F. (2007*). Fundamentals of Nursing: human health and function*. Philadelphia: Lippincott publishers.

Denise, Polit F. (2010).*Nursing research – principles and methods*. Philadelphia: Lippincott Company.

Edwards, R.W., et al. (1991). *Davidson Principles and Practice of Medicine.* Hong Kong: ELBS edition.

Elakkuvana, Raj Bhaskara. (2010). *Nursing Research and Biostatistics*. Bangalore: Emmis publishers.

Fawcett, Jacqueline. (2005). *Analysis and Evaluation of Nursing Theories*. Philadelphia: F.A Davis Company publishers.

George, Julia B. (1995). *Nursing Theories*. Philadelphia: Mosby Company.

Geri Le Brindo Wood., & Haber, Judith. (1990). *Nursing Research Methods, Critical Appraisal and Utilization.* Toronto: CV. Mosby Company.

Grove, Susan K., & Burns, Nancy. (2005). *The Practice of Nursing Research: appraisal, synthesis and generation of evidence*. USA: Elsevier publishers.

Gurumani (2005).*Introduction to Biostatistics*. Bangalore: Jaypee publishers

Hatchett, Richard., & Thompson, David R (2007) *Cardiac Nursing: A Comprehensive Guide.* China:Elsevier

Ignavaticus, Donna D., & Workman, Linda M. (2013). *Medical-Surgical Nursing Patient-Centered Collaborative Care.* United States of America:Elsevier

James, Fain A. (2009). *Reading, Understanding and Applying Nursing Research*. New Delhi: Jayvee publishers.

Johnson, Betty M., & Webber, Pamela B. (2005). *An Introduction to Theory and Reasoning in nursing***.** USA: Evolve Elsevier publication.

Kozier, Barbara., et al. (2000). *Fundamentals of nursing concepts and process*. New York. Addison Wesley publishers.

Lemone, Priscilla., & Burke, Karen. (2008**).** *Medical Surgical Nursing Critical Thinking in Client Care*. New Delhi: Dorling Kindersely publishers.

Lemone, Priscilla., & Burke, Karen. (2005). *Medical Surgical Nursing*. USA: Pearson Education. Alaska

Lewis Sharon L., et al. (2007). *Medical Surgical Nursing –Assessment and Management of Clinical Problems.* St.Louis: Mosby Company.

Mahajan, B. K. (2005). *Methods in biostatistics*, New Delhi: Jaypee brother publishers.

Mcneill Patrick., & Chapman Steve (2005). *Research Methods*. USA: Tavistock publications Ltd.

Munro, Hazard Barbara (2005). *Statistical Methods for Health Care Research*. New York: Lippincott Williams and Wilkins.

Nicoll, Leslie H. (1992). *Perspective of nursing theory***.** Philadelphia: J. P Lippincott publisher.

Patrick, Joyce Fitz J., et al. (2005) *Conceptual models of nursing – Analysis and Application***.** Marylant: Apprentice Hall publishers.

Peggy, Chinn L. (2004). *Nursing Research Methodology: Issues and Implementation*'s: Aspen publishers.

Rao, Sundar. (2006). *Introduction to biostatistics and research method***.** New Delhi: Prentice Hall of India.

Satyanarayana. (2006). Biostatistics**.** New Delhi: Practice Hall of India PVT Limited.

Shafer, Kathleen Newton., et al. (2008).*Medical Surgical Nursing*. London: C.V Mosby Company.

Suddarth, Doris Smith. (1991). *The Lippincott Manual of Nursing Practice*. Philadelphia: J.B.Lippincott Company.

Veer, Restog Bala (2009). *Fundamentals of Biostatistics*. New Delhi: Ane Books PVT Ltd.

Treece. (2005). *Elements of Research in Nursing*. New Delhi: All India Publishers and Distributors.

JOURNALS:

Allen , Jerilyn K., Purcell, Alison., Szanton, Sarah., & Dennison, Cheryl R. (2010). Perceptions of Cardiac Risk among a Low-Income Urban Diabetic Population. *Journal Health Care Poor Underserved.* 1(21), 362-370

Andsoy, Isil Isik., Tastan, Sevinc., Iyigun, Emine., & Kopp , Lawrence R. (2015). Knowledge and Attitudes towards Cardiovascular Disease in a Population of North Western Turkey: A Cross- Sectional Survey. *International Journal of Caring Sciences.* (8)1, 115-124

Baby, Elizebeth ., & Martha, Sams Larissa. (2015). Assessment of Knowledge of Patient Regarding Coronary Artery Disease among Patients in Selected Hospitals at Mangalore. *Asian Journal of Nursing Education and Research.* 5(2), 177-179.

Banerjee, Ananya Tina., Strachan, Patricia H., Boyle, Michael H., Anand, Sonia S., & Oremus, Mark **.** (2014). Attending Religious Services and Its Relationship with Coronary Heart Disease and Related Risk Factors in Older Adults: A Qualitative Study of Church Pastors' and Parishioners' Perspectives. *Journal of religion and health.* 53(6). 1770-1785.

Brito, Wellington Fabiano., et al. (2012). Physical activity levels in public school teachers. *Rev Saúde Pública.* 46(1), 1-5.

Charles, Hepsi Rachel. (2014). Prevalence of Cardiac Risk Factors among People Attending an Exhibition. *IOSR Journal of Nursing and Health Science.* (3)6, 47-51.

Chauhan, Shraddha., & Aeri, Bani Tamber. (2013). Prevalence of cardiovascular disease in India and it is economic impact- A review. *International Journal of Scientific and Research Publications*, (3)10, 1-5.

Crouch, R., Wilson, A., & Newbury, J. (2011). A systematic review of the effectiveness of primary health education or intervention programs in improving rural women's knowledge of heart disease risk factors and changing lifestyle behaviours. *International Journal of Evidence-Based Healthcare.* (9)3, 236–245.

Earl Ford, S., & Carl Casperson, J. (2012). Sedentary behaviour and cardiovascular disease: a review of prospective studies. *International Journal of Epidemiology.* 41(5), 1338-1353.

Estruch, Ramon et al (2013). Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. *The New England Journal of Medicine.* 368, 1279-1290.

Familoni, I.F., & Familoni, O.B. (2011). Determinants and perception of cardiovascular risk factors among secondary school teachers in Oyo state Nigeria. *African Journal of Medicine and Medical sciences.* 40(4), 339-343

Fen-Yu Tseng et al. (2012). Subclinical Hypothyroidism Is Associated With Increased Risk for All-Cause and Cardiovascular Mortality in Adults. *Journal of the American College of Cardiology.* (8)60, 730-737.

Francis, Joby., Jose, Josmi., Sunny, Joyse K., Juvairiya, U.S., & Varghese, Sanil. (2014). Knowledge regarding cardiovascular risk factors among people in South India: A Community based study. *Nitte University Journal of Health Science.* 4(1), 42-45.

Greiw, Azza H., Mandil, Ahmed., Wagdi, Mervat., & Elneihoum, Ali (2010). Risk Factors For Cardiovascular Diseases Among School Teachers In Benghazi, Libya. Ibosina Journal of Biomducal Sciences. (4)2.

Grontved , Anders., & Frank, B. (2011). Television Viewing and Risk of Type 2 Diabetes, Cardiovascular Disease, and All-Cause Mortality:A Meta-analysis. *The Journal of American Medical Association.* 305(23), 2448-2455.

Gupta, Rajeev., et al. (2012). Regional variations in cardiovascular risk factors in India: India heart watch. *World Journal of Cardiology.* 4(4), 112–120

Haidinger, T., et al. (2012). Effect of Gender on Awareness of Cardiovascular Risk Factors, Preventive Action Taken, and Barriers to Cardiovascular Health in a Group of Austrian Subjects. *Gender Medicine.* 9(2), 94-102.

Kurth, Tobias., Bubes, Vadim., & Buring, Julie. (2013). Relative Contribution of Migraine with Aura to Cardiovascular Disease Occurrence in Women. *American Academy of Neurology.* (80)1.

Logaraj, M., Balaji, R., John, K.R., Kumar, Shailendra B., & Hegde. (2014). Comparative Study on Risk Factors for cardiovascular Diseases between Urban and Rural Population in Tamil Nadu. *National Journal of Research in Community Medicine.* (3)2, 103-112

Lotfi, Mohammad Hasan., Kannan, Anjur Tupil., Dwivedi, Shridhar., & Sundaram, Kiram Ramesh. (2009). The Role of Socio-economic Indicators in the Causation of Coronary Artery Disease. *Acta Medica Iranica.* (47)4, 301-307.

Mahmood, Syed Esam et al. (2012). Sociodemographic risk factors of cardiovascular disease in rural Lucknow. *International Journal of Medicine and Public health.* (2)1, 56-61

McCullough, Marjorie L., et al. (2012). Flavonoid intake and cardiovascular disease mortality in a prospective cohort of US adults. *American Journal of Clinical Nutrition.* (95)2, 454-464.

Mohammed, Jibril. (2012). Knowledge of, and Attitude to Cardiovascular Disease Risk Factors among Members of The Nigerian Armed Forces. *World Journal of Public Health Sciences.* 1(2), 23-27.

Mohan, Viswanathan., Venkatraman, Janarthanan Vijay., & Pradeepa, Rajendra. (2010). Epidemiology of Cardiovascular Disease in Type 2 Diabetes: The Indian Scenario. *Journal of Diabetes Science and Technology.* 4(1), 158–170.

Muhamad, Rosediani., Yahya, Ranimah., & Yusoff, Harmy Mohamed. (2012). Association between Knowledge, Attitude and Practice on Cardiovascular Disease among Women in Kelantan, Malaysia. *International Journal of Collaborative Research on Internal Medicine & Public Health*. (8)4, 1507-1523.

Mukattash, T.L. et al (2012). Public knowledge and awareness of cardiovascular disease and its risk factors: a cross-sectional study of 1000 Jordanians. *International Journal of Pharmacy Practice.* 20(6), 367-376.

Norman, Gift., George, Carolin., Krishnamurthy, Aditi., & Mukherjee, Devashri. (2012). Burden of cardiovascular risk factors of a rural population in South India using the WHO multivariable risk prediction algorithm. *International Journal of Medical Science and Public Health.* 3(6), 764-768.

Otto, Marcia de Oliveira C., et al (2012). Dietary intake of saturated fat by food source and incident cardiovascular disease: the Multi-Ethnic Study of Atherosclerosis. *The American Journal of Clinical Nutrition.* 96(2), 397-404.

Rao, N., et al (2012). Cardiovascular risk assessment of South Asians in a religious setting: a feasibility study. *International Journal of Clinical Practice.* (66)3, 262–269.

Sarwar, N. et al (2010). Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospective studies. *Lancet.* 375, 2215–2222.

Spratling, Patsy M., et al (2014) Effect of an Educational Intervention on Cardiovascular Disease Risk Perception among women with Preeclampsia. *Journal of Obstetric, Gynecologic, & Neonatal Nursing.* 43(2), 179-189.

Tanno, Kozo., et al. (2013). Associations of marital status with mortality from all causes and mortality from cardiovascular disease in Japanese haemodialysis patients. *Nephrology Dialysis Transplantation.* 1–6.

Taylor, Rod S., Ashton, Kate , E., Moxham, Tiffany ., Hooper, Lee ., & Ebrahim, Shah. (2011). Reduced Dietary Salt for the Prevention of Cardiovascular Disease: A Meta-Analysis of Randomized Controlled Trials (Cochrane Review). *American Journal of Hypertension* . (24)8, 843-853.

Uchenna, D.I., Ambakederemo, T.E., & Jesuorobo, D.E. (2012). Awareness of Heart Disease Prevention Among Patients Attending a Specialist Clinic in Southern Nigeria. *International Journal of Prevention and Treatment.* 1(3), 40-43.

Wang, Yi-Chia., Lin, Chia-Wei., Ho, Yu-Tsun., Huang, Ya-Pin., & Pan, Shin-Liang. (2014). Increased risk of ischemic heart disease in young patients with migraine: A population-based, propensity score-matched, longitudinal follow-up study. *International Journal of Cardiology.* (172)1, 213-216.

Yang, Li-bo et al. (2012). Subclinical hyperthyroidism and the risk of cardiovascular events and all-cause mortality: an updated meta-analysis of cohort studies. *European Journal of Endocrinology.* 1(167), 75-84.

ONLINE JOURNALS:

Al-Nooh, A.A., Alajmi, Abdulabbas Abdulla A., & Wood, D. (2014). The Prevalence of Cardiovascular Disease Risk Factors among Employees in the Kingdom of Bahrain between October 2010 and March 2011: A Cross-Sectional Study from a Workplace Health Campaign. *Cardiology Research and Practice.* (10)1155. doi: 10.1155/2014/832421.

Anug, M.N., et al (2012). Reducing salt intake for prevention of cardiovascular diseases in high-risk patients by advanced health education intervention (RESIP-CVD study), Northern Thailand: study protocol for a cluster randomized trial. *Trials.* (13)158. doi: 10.1186/1745-6215-13-158.

Backe, Eva-Maria., Seidler, Andreas., Latza, Ute., Rossnagel, Karin., & Schumann, Barbara. (2011). The role of psychosocial stress at work for the development of cardiovascular diseases: a systematic review. *International Archives of*

Occupational and *Environmental Health.* 85, 67–79. doi:10.1007/s00420-011-0643-6

Berry, Jarett D. et al (2012). Lifetime Risks of Cardiovascular Disease. *The New England Journal of Medicine.* 366, 321-329. doi: 10.1056/NEJMoa1012848

Bessonova, L. et al (2011). The association of body mass index with mortality in the California Teachers Study. *International Journal of Cancer.* 129(10), 2492-2501. doi: 10.1002/ijc.25905.

Brown, M.C. et al (2013). Women's perception of future risk following pregnancies complicated by preeclampsia. *Hypertension in Pregnancy.* 32(1), 60-73. doi: 10.3109/10641955.2012.704108.

Chomistek, A.K. et al (2013). Relationship of sedentary behavior and physical activity to incident cardiovascular disease: results from the Women's Health Initiative. *Journal of the American College of Cardiology.* 61(23), 2346-2354. doi: 10.1016/j.jacc.2013.03.031.

Claassen, L., Henneman, L., Kindt, I., Marteau, T.M., & Timmermans, D.R. (2010). Perceived risk and representations of cardiovascular disease and preventive behaviour in people diagnosed with familial hypercholesterolemia: a cross-sectional questionnaire study. *Journal of health psychology.* 15(1), 33-43. doi: 10.1177/1359105309345170.

Claassen, Liesbeth., et al. (2011). Causal Beliefs and Perceptions of Risk for Diabetes and Cardiovascular Disease, the Netherlands, 2007. *Preventing Chronic Disease.* 8(6), A130. Doi:PMC3221572.

Cox, J.L. et al (2013). A novel approach to cardiovascular health by optimizing risk management (ANCHOR): behavioural modification in primary care effectively reduces global risk. Canadian Journal of Cardiology. 29(11), 1400-1407. doi: 10.1016/j.cjca.2013.03.007.

Farag, N.H. et al (2010). Evaluation of a community-based participatory physical activity promotion project: effect on cardiovascular disease risk profiles of school employees. *Biomed Central Public health.* (313)10. doi: 10.1186/1471-2458-10-313.

Harari, G., Green, M.S., & Zelber-Sagi, S. (2015). Combined association of occupational and leisure-time physical activity with all-cause and coronary heart disease mortality among a cohort of men followed-up for 22 years. *Occupational and environmental medicine.* (10)1136. doi: 10.1136/oemed-2014-102613.

Homko, C.J. et al (2010). Gender differences in cardiovascular risk factors and risk perception among individuals with diabetes. *Diabetes Education.* 36(3), 483-488. doi: 10.1177/0145721710366757.

Ibrahim, Nahla Khamis., et al (2014). Risk factors of coronary heart disease among medical students in King Abdulaziz University, Jeddah, Saudi Arabia. *BMC International health and human rights.* (14)411, doi:10.1186/1471-2458-14-411.

Imes, C.C., Lewis, F.M., Austin, M.A., & Dougherty, C.M. (2014). My Family Medical History and Me: Feasibility Results of a Cardiovascular Risk Reduction Intervention. *Public Health Nursing.* doi: 10.1111/phn.12130.

Imes, Christopher C., & Lewis, Frances Marcus. (2014). Family history of cardiovascular disease, perceived cardiovascular disease risk, and health-related behaviour: a review of the literature. *The Journal of Cardiovascular Nursing.* 29(2), 108-129. doi: 10.1097/JCN.0b013e31827db5eb.

Kim, Y**.** et al (2013). Association between various sedentary behaviours and all-cause, cardiovascular disease and cancer mortality: the Multiethnic Cohort Study. *International Journal of Epidemiology.* 42 (4), 1040-1056. doi: 10.1093/ije/dyt108.

Li Jian., & Siegrist, Johannes. (2012). Physical Activity and Risk of Cardiovascular Disease-A Meta-Analysis of Prospective Cohort Studies. *International Journal of Environmental and Public health.* (2)9, 391-407. doi:10.3390/ijerph9020391.

Petr, E.J. et al (2014). Perceived lifetime risk for cardiovascular disease. *American Journal of Cardiology.* 114(1), 53-58. doi: 10.1016/j.amjcard.2014.04.006.

Saeed, Omar., et al (2009). Knowledge of modifiable risk factors of Coronary Atherosclerotic Heart Disease (CASHD) among a sample in India. *BMC International health and human rights.* (9)2, doi:10.1186/1472-698X-9-2.

Schnall, Eliezer., et al. (2010). The relationship between religion and cardiovascular outcomes and all-cause mortality in the women's health initiative observational study. *Psychology and health.* 25(2), 249-263. doi:10.1080/08870440802311322.

Seef, S., Jeppsson, A., Stafstrom, M (2013). What is killing? People's knowledge about coronary heart disease, attitude towards prevention and main risk reduction barriers in Ismailia, Egypt (descriptive cross-sectional study). *The Pan African Medical Journal.* (137)15. doi: 10.11604/pamj.2013.15.137.1628.

Sekhri., et al (2014). Prevalence of risk factors for coronary artery disease in an urban Indian population. *British Medical Journal.* 4, doi:10.1136/bmjopen-2014-005346

Williams, Emily D., Nazroo, James N., Kooner, Jaspal S., & Steptoe, Andrew. (2010). Subgroup differences in psychosocial factors relating to coronary heart disease in the UK South Asian population. *Journal of Psychosomatic Research*. 69(4-3), 379–387. doi: 10.1016/j.jpsychores.2010.03.015.

Wilmot, E.G. et al (2012). Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis. *Diabetologia: Clinical and Experimental Diabetes and Metabolism.* 55:2677doi: 10.1007/s00125-012-2677-z

UNPUBLISHED ARTICLES:

Patricia Cioe, A. (2012). Cardiovascular Risk Factor Knowledge, Risk Perception, and Actual Risk in HIV-Infected Patients: A Dissertation. Unpublished manuscript, University of Massachusetts Medical School.

WEBSITES:

https://en.wikipedia.org/wiki/Non-communicable_disease

https://en.wikipedia.org/wiki/Cardiovascular_disease

https://www.health.gov.au/internet/mainpublishing.nsf/content/chronic_cardio

http://www.uniassignment.com

REPORTS:

American College of Cardiology (2012)

American Heart Association (2011)

Centres for Disease Control and Prevention (2015)

Centre for technologies in public health (2011)

International Heart Protection Summit (2011)

National Health and Nutrition Examination Survey (2012)

The Hindu (2013)

World Economic Forum (2011)

World Health Organization (2012)

WHO:

Global Atlas on cardiovascular disease prevention and control (2011)

Prevention of Cardiovascular Disease - Pocket Guidelines for Assessment and Management of Cardiovascular Risk (2007)

APPENDICES

Love to Serve
அறஞ்செய விரும்பு

INTERNATIONAL CENTRE FOR COLLABORATIVE RESEARCH
OMAYAL ACHI COLLEGE OF NURSING
Run by MR Omayal Achi MR Arunachalam Trust

ETHICAL CLEARANCE CERTIFICATE

Valid from: April 2013

Valid to: October 2015 (2 Years)

Name of the Principle Investigator: Ms. Sharon Grace Joseph, M.Sc.(N) Student (Medical Surgical Nursing)

The **ICCR** Ethical Committee meeting had reviewed the project titled **" A quasi experimental study to assess the effectiveness of multifactorial intervention package on knowledge, risk perception and readiness to change life style behaviour regarding prevention of cardiovascular diseases among teachers at selected schools, Chennai".** The proposal was found to be acceptable on ethical grounds. The Principle Investigator has the responsibility and accountability for any other administrative / regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review.

This certificate of approval is valid for the time period provided, there is no change in the methodology protocol or consent process and documents.

Any significant change should be reported to Director for Research Committee considerations in advance for its implementation.

Signature of Research Director :

Research Director
ICCR
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Signature of Researcher :

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15th & 22nd

8.1.2015

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Chennai-53

Sir/Madam,

2o Hon(Ors)

Sub: Request for permission to conduct Main Study.

Ms. Sharon Grace Joseph, is a bonafide M.Sc(Nursing) II year student studying at our College and she is conducting "A STUDY TO ASSESS THE EFFECTIVENESS OF MULTIFACTORIAL INTERVENTION PACKAGE ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CARDIOVASCULAR DISEASE AMONG TEACHERS AT SELECTED SCHOOLS, CHENNAI ".

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc(Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the School. The information collected from your school will be kept confidential.

I kindly request you to grant her permission to conduct the study at your Esteemed School.

Thanking you,

Yours Sincerely,
OMAYAL ACHI COLLEGE OF NURSING
Principal

Permission granted to conduct the project on 15th and 22nd of April respectively.

BS
22/4/15

SETHU BHASKARA MATRIC. HR. SEC. SCHOOL * CH-53 *

OMAYAL ACHI COLLEGE OF NURSING

Run by MR. Omayal Achi MR.Arunachalam Trust

45, AMBATTUR ROAD, PUZHAL, CHENNAI - 600 066.
(Affiliated to the Tamilnadu Dr.M.G.R. Medical University
Recognized by the Indian Nursing Council & TN Nurses and Midwives Council)

Love to Serve
அறஞ்செய விரும்பு

Tel : 26591617, 26591618
Fax : 26591616
E-mail : oacn1992@gmail.com
Website : omayaln.com

01.06.2015

The Principal
Good Shepherd Matriculation Higher Secondary
School,
No.5, Radhakrishnan Street,
Charles Nagar, Pattabiram,
Chennai-600 072.

Sir/Madam,

Sub: Request for permission to conduct
Research study.

Ms. Sharon Grace Joseph, is a bonafide M.Sc(Nursing) II year student studying at our College and she is conducting "A STUDY TO ASSESS THE EFFECTIVENESS OF MULTIFACTORIAL INTERVENTION PACKAGE ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CARDIOVASCULAR DISEASE AMONG TEACHERS AT SELECTED SCHOOLS, CHENNAI ".

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc(Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the School. The information collected from your school will be kept confidential.

I kindly request you to grant her permission to conduct the study at your Esteemed School.

Thanking you,

Yours Sincerely,
OMAYAL ACHI COLLEGE OF NURSING
Principal

Permission granted and date. Sgd. following 05.06.2015 & 1-06-2015.

Principal / Correspondent
GOOD SHEPHERD MATRIC. HR. SEC. SCHOOL
PATTABIRAM, CHENNAI - 600 072.

GOOD SHEPHERD MATRIC. HR. SEC. SCHOOL
PATTABIRAM, CHENNAI - 600072

OMAYAL ACHI COLLEGE OF NURSING

Run by MR. Omayal Achi MR.Arunachalam Trust

45, AMBATTUR ROAD, PUZHAL, CHENNAI - 600 066.
(Affiliated to the Tamilnadu Dr.M.G.R. Medical University
Recognized by the Indian Nursing Council & TN Nurses and Midwives Council)

Tel : 26591617, 26591618
Fax : 26591616
E-mail : oacn1992@gmail.com
Website : omayaln.com

01.06.2015

The Principal
Immanuel Matriculation Higher Secondary School,
No.27, B.O.D.Street,
Pattabiram,
Chennai-600 072.

Sir/Madam,

Sub: Request for permission to conduct
Research study.

Ms. Sharon Grace Joseph, is a bonafide M.Sc(Nursing) II year student studying at our College and she is conducting "A STUDY TO ASSESS THE EFFECTIVENESS OF MULTIFACTORIAL INTERVENTION PACKAGE ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CARDIOVASCULAR DISEASE AMONG TEACHERS AT SELECTED SCHOOLS, CHENNAI ".

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc(Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the School. The information collected from your school will be kept confidential.

I kindly request you to grant her permission to conduct the study at your Esteemed School.

Thanking you,

Yours Sincerely,
OMAYAL ACHI COLLEGE OF NURSING
Principal

Permission granted.
Done on 6/6/15 & 13/6/15

T. ANITHA
PRINCIPAL
IMMANUEL MATRICULATION
HIGHER SECONDARY SCHOOL
No: 27, B.O.D. Road, Pattabiram, Chennai - 600 072

IMMANUEL MATRIC. HR. SEC. SCHOOL * PATTABIRAM CHENNAI-72

OMAYAL ACHI COLLEGE OF NURSING

Run by MR. Omayal Achi MR.Arunachalam Trust

45, AMBATTUR ROAD, PUZHAL, CHENNAI - 600 066.
(Affiliated to the Tamilnadu Dr.M.G.R. Medical University
Recognized by the Indian Nursing Council & TN Nurses and Midwives Council)

Love to Serve
அறஞ்செய விரும்பு

Tel : 26591617, 26591618
Fax : 26591616
E-mail : oacn1992@gmail.com
Website : omayaln.com

01.06.2015

The Principal
Infant Matriculation School,
Pattabiram,
Chennai-600 072.

Sir/Madam,

Sub: Request for permission to conduct Research study.

Ms. Sharon Grace Joseph, is a bonafide M.Sc(Nursing) II year student studying at our College and she is conducting "A STUDY TO ASSESS THE EFFECTIVENESS OF MULTIFACTORIAL INTERVENTION PACKAGE ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CARDIOVASCULAR DISEASE AMONG TEACHERS AT SELECTED SCHOOLS, CHENNAI ".

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc(Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the School. The information collected from your school will be kept confidential.

I kindly request you to grant her permission to conduct the study at your Esteemed School.

Thanking you,

Yours Sincerely,
OMAYAL ACHI COLLEGE OF NURSING
Principal

Permission granted.
Done on 6.6.15 & 13.6.15.

INFANT JESUS NURSERY AND PRIMARY SCHOOL
PATTABIRAM CHENNAI 600 072

13.6.15
VICE PRINCIPAL
INFANT JESUS NURSERY
AND PRIMARY SCHOOL
PATTABIRAM, CHENNAI - 600 072

OMAYAL ACHI COLLEGE OF NURSING

Run by MR. Omayal Achi MR.Arunachalam Trust

45, AMBATTUR ROAD, PUZHAL, CHENNAI - 600 066.
(Affiliated to the Tamilnadu Dr.M.G.R. Medical University
Recognized by the Indian Nursing Council & TN Nurses and Midwives Council)

Love to Serve
அறஞ்செய விரும்பு

Tel : 26591617, 26591618
Fax : 26591616
E-mail : oacn1992@gmail.com
Website : omayaln.com

24.06.2015.

The Principal,
Ebenezer Matriculation Higher Secondary School,
9th Street, TNHB Colony,
Korattur
Chennai-600 062.

Sir/Madam,

Sub: Request for permission to conduct
Research study.

Ms. Sharon Grace Joseph, is a bonafide M.Sc(Nursing) II year student studying at our College and she is conducting "A STUDY TO ASSESS THE EFFECTIVENESS OF MULTIFACTORIAL INTERVENTION PACKAGE ON KNOWLEDGE, RISK PERCEPTION AND READINESS TO CHANGE LIFESTYLE BEHAVIOUR REGARDING PREVENTION OF CARDIOVASCULAR DISEASE AMONG TEACHERS AT SELECTED SCHOOLS, CHENNAI ".

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc(Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the School. The information collected from your school will be kept confidential.

I kindly request you to grant her permission to conduct the study at your Esteemed School.

Thanking you,

Yours Sincerely,
OMAYAL ACHI COLLEGE OF NURSING

Principal

Permission granted.
Conducted on 22nd & 29th of June 2015.

Principal
EBENEZER MAT. HR. SEC. SCHOOL
KORATTUR, CHENNAI-600 080

EBENEZER MAT. HR. SEC. SCHOOL
CHENNAI
600 080

APPENDIX – C

LETTER SEEKING EXPERT'S OPINION FOR CONTENT VALIDITY

From
Ms. Sharon Grace Joseph
M.sc (N) I year,
Omayal Achi College of Nursing,
Puzhal, Chennai.

To
Respected Madam,
Sub: Requisition for expert opinion for content validity.

I am Ms.Sharon Grace Joseph doing my M.Sc Nursing I year specializing in Medical-Surgical nursing at Omayal Achi College of Nursing, under the guidance of Dr.Mrs.S.Kanchana, Research Director, ICCR, and specialty guidance of Assistant Professor. Mrs.Sasikala.S, Medical-Surgical Nursing Department. As a part of my research project to be submitted to the Tamil Nadu Dr. M.G.R. Medical University and in partial fulfillment of the University requirement for the award of M.sc Nursing degree, I am conducting **"A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers, at selected schools, Chennai."** I have enclosed my data collection and intervention tool for your expert guidance and validation. Kindly do the needful.

Thanking you,

Yours faithfully,
Ms. Sharon Grace Joseph

Enclosure:

1. Research proposal
2. Data collection tool
3. Intervention tool
4. Content validity form
5. Certificate for content validity

LIST OF EXPERTS FOR CONTENT VALIDITY

MEDICAL EXPERT

1. **Dr. P. Mahesh Babu, M.D, D.N.B (Cardio)**
   Consultant Cardiologist,
   Vijaya Heart Foundation,
   Vadapalani, Chennai – 600 026, Tamil Nadu.

MEDICAL SURGICAL NURSING EXPERTS

2. **Mrs. Aswathi, M.Sc (N),**
   Principal,
   St. Thomas College of Nursing,
   Changanacherry,
   Kerala.

3. **Mrs. Hema Suresh, M.Sc (N),**
   Principal,
   Dr.M.G.R. Educational and Research Institute University,
   Chennai.

4. **Mrs. Uma Raghu, MSc (N),**
   Professor,
   Medical Surgical Nursing Department,
   M.A. Chidambaram College of Nursing,
   Chennai.

5. **Mrs. Uma.P,**
   Associate Professor,
   Medical Surgical Nursing Department,
   Vignesh Nursing College,
   Thiruvannamalai, Chennai.

PHYSIOTHERAPIST:

6. **Dr. Juliet Jose, MPT, MIAP**
   Consultant Physiotherapist,
   Choolaimedu,
   Chennai.

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection and intervention tool developed by Ms. Sharon Grace Joseph, M.Sc.(Nursing) II year student of Omayal Achi College of Nursing for her study **"A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 21/11/15

Dr. P. MAHESH BABU, M.D.,D.N.B.(Cardio)
CONSULTANT CARDIOLOGIST
REGD. No: 58909
VIJAYA HEART FOUNDATION
VIJAYA HOSPITAL

Seal :

VIJAYA HEART FOUNDATION

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection and intervention tool developed by Ms. Sharon Grace Joseph, M.Sc.(Nursing) II year student of Omayal Achi College of Nursing for her study **"A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 9/2/2015

PRINCIPAL
ST. THOMAS COLLEGE OF NURSING
CHETHIPUZHA
CHANGANACHERRY - 686 104

Seal :

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection and intervention tool developed by Ms. Sharon Grace Joseph, M.Sc.(Nursing) II year student of Omayal Achi College of Nursing for her study **"A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date:

PRINCIPAL
FACULTY OF NURSING
Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
UNIVERSITY
(DECL U/S 3 OF UGC ACT 1956)
CHENNAI-95.

Dr. MGR Educational and Research Institute University
Faculty of Nursing
Chennai.
Date: 23/12/14

Seal :

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection and intervention tool developed by Ms. Sharon Grace Joseph, M.Sc.(Nursing) II year student of Omayal Achi College of Nursing for her study **"A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 9/03/15

Seal : M.A.C. COLLEGE OF NURSING Chennai-113

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection and intervention tool developed by Ms. Sharon Grace Joseph, M.Sc.(Nursing) II year student of Omayal Achi College of Nursing for her study **"A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 1/2/15

Vignesh Nursing College
Tiruvannamalai-606603

Seal :

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the video on "Heart Healthy Exercises" developed by **Ms. Sharon Grace Joseph,** M. Sc (Nursing) II year student of Omayal Achi College of Nursing, Puzhal; for her study "**A quasi experimental study to assess the effectiveness of multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behavior regarding prevention of Cardiovascular Disease (CVD) among teachers at selected schools, Chennai"** serves the purpose and it is beneficial for all the teachers and is validated by the undersigned and she can proceed with this to conduct the main study.

Signature with Date: Juliet Jose 24/6/15

Seal : Dr. JULIET JOSE, MPT (Hand), MIAP
Consultant Physiotherapist
Reg. No. L-15836

APPENDIX D

CERTIFICATE FOR ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms.Sharon Grace Joseph , M.Sc Nursing II year student of Omayal Achi College of Nursing Chennai, conducted a dissertation work on " **A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular diseases among teachers at selected school, Chennai. 2015"** under the guidance of Mrs.Sasikala.S, as a partial fulfillment of the The Tamil Nadu Dr. M.G.R medical university requirement for the award of M.Sc Nursing degree is edited for English language appropriateness by M. ANURADHA [PGT ENGLISH]

Signature with Date: 7/8/15

Seal: Mrs.M.ANURADHA, M.A.,B.Ed.,M.Phil.
PGT English
Smt. M.J.V. Hr. Sec. School,
Arumbakkam, Chennai-600 106.

☎ 26841126

MRO AR
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அன்பு செய்வோம்

OMAYAL ACHI COMMUNITY HEALTH CENTRE

ARAKKAMBAKKAM, CHENNAI - 600 055.

INFORMATION EDUCATION COMMUNICATION DEPARTMENT

IEC APPROVAL CERTIFICATE

Name of the Principle Investigator: **Ms. Sharon Grace Joseph,**

The **IEC** committee meeting had reviewed the IEC materials – Power Point Presentation, Booklet titled **"Prevention of Cardiovascular diseases"** and Video show on **"Heart Healthy exercises".**

The IEC materials were found to be acceptable on principles of AV AIDS preparation. It is certified that the intervention tool based on IEC materials are appropriate and consistent with the lesson plan to administer for the research project titled **"A quasi experimental study to assess the effectiveness of Multifactorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of Cardiovascular diseases among teachers at selected schools, Chennai".**

Any significant change should be reported to coordinator / Director IEC department for considerations in advance for its implementation.

Signature of the IEC Director

Signature of the IEC Coordinator :

Signature of the H.O.D :

Signature of the Researcher :

Date : 12.08.15

APPENDIX – F

INFORMED CONSENT REQUISITION FORM

Good morning,

I, Ms.Sharon Grace Joseph, M.Sc (Nursing) student from Omayal Achi College of Nursing, Puzhal, Chennai, conducting "**A quasi experimental study to assess the effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers, at selected schools, Chennai.**" as a partial fulfillment of the requirement for the degree of M.Sc. Nursing under the Tamil Nadu Dr.M.G.R. Medical University.

I assure you that information provided by you will be kept confidential. Hence I request you to kindly cooperate with me and participate in this study by giving your frank and honest responses to the questions being asked.

Thank you

Signature of the investigator

Ms.Sharon Grace Joseph

INFORMED WRITTEN CONSENT FORM

I understand that I am being asked to participate in a research study conducted by **Ms.Sharon Grace Joseph,** M.Sc. (N) student of Omayal Achi College of Nursing. This research study will assess the "**effectiveness of multi-factorial intervention package on knowledge, risk perception and readiness to change lifestyle behaviour regarding prevention of cardiovascular disease among teachers ".** If I agree to participate in the study, I will be given the intervention (a teaching, video show and a booklet). I understand that there are no risks associated with this study.

I understand that my knowledge, risk perception and readiness to change lifestyle behaviour with regard to prevention of CVD will be assessed**.** I realize that the knowledge gained from this study may help either me or other people in the future. I realize that my participation in this study is entirely voluntary, and I may withdraw from the study at any time I wish. If I decide to discontinue my participation in this study, I will continue to be treated in the usual and customary fashion.

I understand that all my study data will be kept confidential. However, this information may be used in nursing publication or presentations. If I need to, I can contact **Ms.Sharon Grace Joseph,** M.Sc. (N) II year student of Omayal Achi College of Nursing, No-45 Ambattur road, Puzhal, Chennai any time during the study.

The study has been explained to me by the researcher. I have read and understood this consent form, all of my questions have been answered, and I agree to participate in the study. I understand that I will be given a copy of this signed consent form.

---------- ----------

Signature of Participant Date:

---------- ----------

Signature of Investigator Date:

APPENDIX – G

DATA COLLECTION TOOLS

TOOL I: MODIFIED FRAMINGHAM RISK ASSESSMENT TOOL

S.No	Question	Yes	No
1.	Do you have a family history of cardiovascular problems?		
2.	Are you a diabetic?		
3.	Are you diagnosed to have high blood cholesterol?		
4.	Did you have a history of preeclampsia during pregnancy?		
5.	Is your BMI more than 24 kg/m^2?		
6.	Do you smoke?		
7.	Do you drink alcohol?		
8.	Do you take oral contraceptives?		
9.	Do you eat junk/fried foods three times a week or more?		
10.	Are you too busy to spare time for exercise?		
11.	Have you attained menopause?		
12.	Do you lead a stressful life?		

TOOL II: BACKGROUND VARIABLES

I. DEMOGRAPHIC VARIABLES

1. Age in years
    a. 26-35
    b. 36-45
    c. 46-55
    d. > 55
2. Gender
    a. Male
    b. Female
3. Educational qualification
    a. Nursery trained
    b. Secondary trained
    c. Undergraduate
    d. Postgraduate
    e. Others
4. Marital status
    a. Single
    b. Married
    c. Separated
    d. Widowhood
5. Type of family
    a. Nuclear family
    b. Joint family
    c. Extended family
    d. Others
6. Family monthly income in Rs
    a. < 10,000
    b. 10,000 – 20,000
    c. 21,000 – 30,000
    d. >30,000

7. Religion
    a. Hindu
    b. Christian
    c. Muslim
    d. If others please specify - _____

II. PERSONAL HISTORY

8. Family history of cardiovascular disease
    a. Yes
    b. No
9. If yes, Nature of relationship with affected member
    a. Paternal
    b. Maternal
    c. Both
    d. Sibling
10. If female, personal history of Preeclampsia
    a. Yes
    b. No
11. Personal history of Diabetes mellitus
    a. Yes
    b. No
12. If yes, chronicity of the disease
    a. <1 year
    b. 1-3 years
    c. 4-6 years
    d. > 6 years
13. If yes, type of treatment
    a. Regular
    b. Irregular
14. Any other comorbid illness _____

15. Any medications _____

III. BIOPHYSICAL VARIABLES

16. BMI
    a. <18 kg/m²
    b. 18-24 kg/m²
    c. >24 kg/m²

IV. PERSONAL HABITS

17. Habit of eating junk or fried foods
    a. Yes
    b. No
18. If yes, frequency of consumption
    a. Once a week
    b. Twice a week
    c. Thrice or more in a week
19. Habit of doing exercise
    a. Yes
    b. No
20. If yes, frequency
    a. Everyday
    b. Once a week
    c. Twice a week
    d. Thrice in a week

TOOL III: STRUCTURED KNOWLEDGE QUESTIONNAIRE ON RISK FACTORS OF CARDIOVASCULAR DISEASE (CVD)

1. Heart disease commonly occurs at
   a. Young age
   b. Birth
   c. Old age
   d. Any age

2. The risk of developing heart disease in men and postmenopausal women is
   a. Low
   b. High
   c. Equal
   d. None

3. Women are less likely to get heart disease due to hormones
   a. Oestrogen and progesterone
   b. Progesterone and thyroid stimulating hormone
   c. Oestrogen and oxytocin
   d. Prolactin and progesterone

4. Men with the following habit have increased risk of heart disease,
   a. Cycling
   b. Smoking
   c. Oral contraceptives
   d. Walking

5. The risk of heart disease in an individual with family history is
   a. None
   b. Low
   c. High
   d. Moderate

6. An individual is at high risk of developing CVD if he has
   A. First degree male relative with CVD before age 55
   B. First degree female relative with CVD before age 65
   C. Second degree male relative with CVD before age 55
   D. Second degree female relative with CVD before age 65
   a. B + C
   b. A + B
   c. C + D
   d. A + D
   e.
7. Preeclampsia is a pregnancy disorder characterised by high blood pressure with
   a. Increased protein in the urine and high blood sugar
   b. Swelling of extremities and increased protein in the urine.
   c. Increased platelet count and high thyroxine
   d. Anaemia and vomiting

8. Smoking increases risk of heart disease by
   a. 2-4 times
   b. 1-2 times
   c. 3-4 times
   d. 4-5 times

9. Nicotine content in cigarettes
   a. Constricts arteries
   b. Strengthens arteries
   c. Relaxes arteries
   d. Smoothens arteries

10. Good cholesterol in the blood is
    a. Low Density Lipoprotein (LDL)
    b. Very Low Density Lipoprotein (VLDL)
    c. High Density Lipoprotein (HDL)
    d. Triglycerides

11. The foods that increase Low Density Lipoprotein (LDL) level are
    a. Fresh fruits and vegetables
    b. Ragi, maize and dhal.
    c. Egg white
    d. Fried vegetables, sweets, pickles

12. The foods that increase High Density Lipoprotein (HDL) level are
    a. Milk and milk products
    b. Fried vegetables, sweets, pickles
    c. Fresh fruits and vegetables
    d. Butter, ghee, vanaspathi

13. Diabetes mellitus,(blood sugar >200 mg/dl) will
    a. Weaken blood vessels
    b. Strengthen blood vessels
    c. Weaken heart muscles
    d. Strengthen heart muscles

14. Diabetes increases risk of heart disease by
    a. 3-4 times
    b. 2-4 times
    c. 4-5 times
    d. 1-2 times

15. A regular master health checkup has to be done once
    a. A year
    b. In 6 months
    c. A month
    d. In 3 months

16. Obesity can raise level of
    a. Good cholesterol
    b. Bad cholesterol
    c. Hormones
    d. Vitamins

17. The physical activity that reduces risk of heart disease is
    a. Sleeping
    b. Eating
    c. Brisk walking
    d. Riding bike

18. Chronic stress can lead to
    a. Congenital disease
    b. Hypertension
    c. Fever
    d. Tuberculosis

19. Stress can be managed by
    a. Getting up late
    b. Meditation
    c. Binge eating
    d. Smoking

20. Drinking too much alcohol can lead to
    a. High cholesterol level
    b. Low blood pressure
    c. Decreased calorie intake
    d. Low blood sugar

TOOL IV: 4 POINT LIKERT RISK PERCEPTION SCALE

Instruction: Rate the following questions against the given scale.

Sl. No.	Questions	Strongly Disagree	Disagree	Agree	Strongly Agree
1.	There is a possibility that I will get heart disease in the next 10 years				
2.	Having a family history of heart disease does not put one at risk for heart disease				
3.	As I age, I will be at greater risk of developing heart disease				
4.	A person who stops smoking and drinking alcohol will lower their risk of heart disease				
5.	Women are at lower risk for heart disease after middle age when compared to men				
6.	High blood sugar does not put a strain on the heart				
7.	Intake of fatty and junk foods elevates blood cholesterol levels				
8.	Being overweight does not increase a person's risk of heart disease				
9.	Stress has no effect on the heart				
10.	Irregular intake of medications for co-morbid illnesses affects the heart				

TOOL V: 5 POINT LIKERT READINESS TO CHANGE LIFESTYLE BEHAVIOUR SCALE

Instruction: Rate the following questions against the given scale.

S.No.	Questions	No interest	Thinking about it	Decided to do	Began to do	Already doing
	Exercise:					
1.	Perform purposeful exercise at least 30 minutes/ day/week					
2.	Involve in "extra" physical activity daily ("extra" = taking stairs rather than lift, walking pets, walking instead of using vehicle for short distance, etc)					
3.	Participate in outdoor sports activity at least 1-2 times weekly (e.g., volley ball, cricket, tennis, etc)					
	Nutrition:					
4.	Eat 5 or more servings of fruits and vegetables daily					
5.	Consistently choose foods with whole grains					
6.	Choose foods high in fibre					
7.	Maintain ideal body weight					
	Personal Habits:					
8.	Avoid smoking or tobacco use and alcohol consumption					
9.	Involve in recreational activities – hobbies, an outing with family					
10.	Master health check up once in a year					

SCORING KEY

Tool I: Modified Framingham risk assessment tool.

This part consisted of 12 questions (yes/no type) that assessed the level of risk.

Scoring

Each "yes" was awarded a score of '1' and each "no" was awarded '0'. The overall score is 12, maximum score is 12 and minimum score is 0. The raw data was computed to interpret the level of risk.

Interpretation of Modified Framingham risk assessment tool

Score	Inference
<10%	Low risk
10-20%	Moderate risk
>20%	High risk

Tool II: Background variables.

This part consisted of structured questionnaire to assess the demographic data and clinical data. It consists of demographic variables and clinical variables such as age, gender, educational qualification, marital status, religion, family income, type of family, family history of CVD, history of Co-morbid illness (Hypothyroidism, Migraine), medications and chronic diseases (Preeclampsia & Diabetes Mellitus), treatment (regular/irregular), personal Habits (consumption of junk foods/regular exercise) and BMI.

Tool III: Structured knowledge questionnaire

This part consisted of structured knowledge questionnaire to assess the knowledge level of teachers regarding risk factors of CVD. It consisted of 20 questions. Each question ended with multiple choices. Teachers were asked to select the correct answer from the four options given.

Scoring key

Each correct answer was given '1' mark, and wrong and unattended question was given '0' mark. The raw score was converted to % to interpret the level of knowledge, the overall score was 20, maximum score is 20 and minimum score is 0.

Interpretation of level of knowledge

Score	Level of knowledge
≤50%	Inadequate level of knowledge
51-75%	Moderate level of knowledge
>75%	Adequate level of knowledge

Tool IV: 4 point likert risk perception scale.

This part consisted of a structured rating scale to assess the CVD risk perception. This consisted of 10 items positively and negatively worded scoring from 1-4.

Scoring

	Strongly Disagree	Disagree	Agree	Strongly Agree
Positive questions	1	2	3	4
Negative questions	4	3	2	1

The raw score was converted to percentage (%) to interpret the level of CVD risk perception, the overall score was 40, maximum score is 40 and minimum score is 10.

Interpretation of level of CVD risk perception

Score	Level of readiness
≤50%	Inadequate CVD risk perception
51-75%	Moderate CVD risk perception
>75%	Adequate CVD risk perception

Tool V: 5 point likert readiness to change lifestyle behaviour scale.

This part consisted of a structured rating scale to assess the readiness to change lifestyle behaviour. This consisted of 10 positively worded items scoring from 1-5.

Scoring

	No interest	**Thinking about it**	**Decided to do**	**Began to do**	**Already doing**
Positive questions	1	2	3	4	5

The raw score was converted to percentage (%) to interpret the level of readiness to change lifestyle behaviour, the overall score was 50, maximum score is 50 and minimum score is 50.

Interpretation of level of readiness to change lifestyle behavior

Score	**Level of readiness**
≤50%	Inadequate readiness
51-75%	Moderate readiness
>75%	Adequate readiness

APPENDIX – H

CODING FOR BACKGROUND VARIABLES

I. DEMOGRAPHIC VARIABLES

	Code
1. Age in years	
a. 26-35	1
b. 36-45	2
c. 46-55	3
d. > 55	4
2. Gender	
a. Male	1
b. Female	2
3. Educational qualification	
a. Nursery trained	1
b. Secondary trained	2
c. Undergraduate	3
d. Postgraduate	4
e. Others	5
4. Marital status	
a. Single	1
b. Married	2
c. Separated	3
d. Widowhood	4
5. Type of family	
a. Nuclear family	1
b. Joint family	2
c. Extended family	3
d. Others	4
6. Family monthly income in Rs	
a. < 10,000	1
b. 10,000 – 20,000	2
c. 21,000 – 30,000	3
d. >30,000	4

7. Religion
    a. Hindu 1
    b. Christian 2
    c. Muslim 3
    d. If others please specify - _____ 4

II. PERSONAL HISTORY

8. Family history of cardiovascular disease
    a. Yes 1
    b. No 2
9. If yes, Nature of relationship with affected member
    a. Paternal 1
    b. Maternal 2
    c. Both 3
    d. Sibling 4
10. If female, personal history of Preeclampsia
    a. Yes 1
    b. No 2
11. Personal history of Diabetes mellitus
    a. Yes 1
    b. No 2
12. If yes, chronicity of the disease
    a. <1 year 1
    b. 1-3 years 2
    c. 4-6 years 3
    d. > 6 years 4
13. If yes, type of treatment
    a. Regular 1
    b. Irregular 2
14. Any other comorbid illness _____
15. Any medications _____

V. BIOPHYSICAL VARIABLES

16. BMI
    a. <18 kg/m² 1
    b. 18-24 kg/m² 2
    c. >24 kg/m² 3

VI. PERSONAL HABITS

17. Habit of eating junk or fried foods
    a. Yes 1
    b. No 2
18. If yes, frequency of consumption
    a. Once a week 1
    b. Twice a week 2
    c. Thrice or more in a week 3
19. Habit of doing exercise
    a. Yes 1
    b. No 2
20. If yes, frequency
    a. Everyday 1
    b. Once a week 2
    c. Twice a week 3
    d. Thrice in a week 4

APPENDIX – I

BLUE PRINT

S.No.	Content	Item	Total item	Percentage
1.	**Modified Framingham risk assessment tool**	1-12	12	100%
2.	**Background variables**	1-20	20	100%
3.	**Structured Knowledge questionnaire** Non-modifiable risk factors Modifiable risk factors	 1-7 8-20	 7 13	 35% 65%
	Total		20	100%
4.	**4 point likert risk perception scale**	1-10	10	100%
5.	**5 point likert readiness to change lifestyle behaviour scale**	1-10	10	100%

APPENDIX – J

MULTI-FACTORIAL INTERVENTION PACKAGE

- Lecture cum discussion regarding prevention of CVD
- Video show on Heart healthy exercises
- Booklet on prevention on CVD

LESSON PLAN ON PREVENTION OF CARDIOVASCULAR DISEASES

LESSON PLAN ON PREVENTION OF CARDIOVASCULAR DISEASES

Topic	:	Prevention of Cardiovascular Diseases
Group	:	Teachers
Time	:	30 minutes
Place	:	Class room at selected school
Name of the Investigator	:	Ms. Sharon Grace Joseph
Method of teaching	:	Lecture cum Discussion
Teaching aids	:	PowerPoint presentation, lecture cum discussion
General objective	:	The teachers will acquire in-depth of knowledge regarding prevention of cardiovascular diseases and develop desirable attitude and adopt preventive measures to avoid developing cardiovascular diseases during their lifetime.
Specific objectives	:	At the end of the discussion. The teacher will be able to

1. state the meaning of cardiovascular disease
2. list the common cardiovascular diseases
3. specify the risk factors for cardiovascular diseases
4. explain the pathophysiology of cardiovascular diseases
5. enlist the signs and symptoms of cardiovascular diseases
6. state the screening and diagnostic measures for cardiovascular diseases
7. mention the treatment for cardiovascular diseases
8. describe the ways to prevent developing cardiovascular diseases
9. specify the consequences for not modifying lifestyle

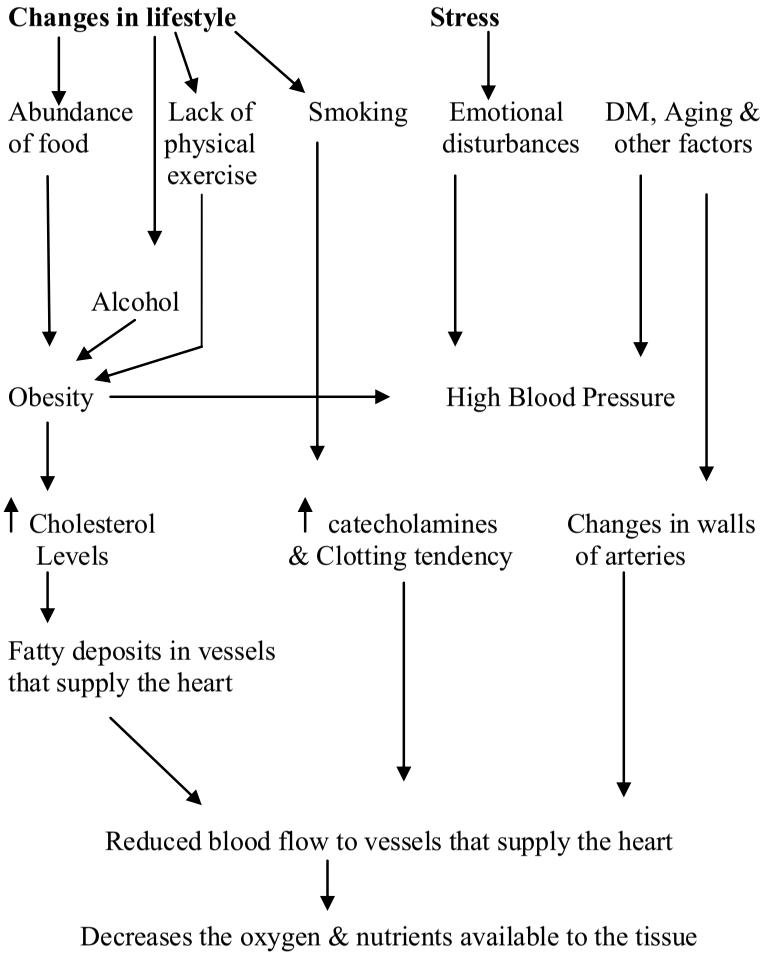
S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
1.	introduce the topic	**INTRODUCTION**: Non-communicable disease (NCD) is a medical condition or disease which is non-infectious and non-transmittable between persons. They include autoimmune diseases, heart disease, stroke, many cancers, asthma, diabetes, chronic kidney disease, osteoporosis, alzheimer's disease, cataracts and more. The World Health Organisation (WHO,2012) reports NCDs to be by far the leading cause of mortality in the world, representing over 60% of all deaths. Cardiovascular Diseases (CVDs) remain the biggest cause of deaths worldwide. It is the no.1 cause of mortality among general population. In India, roughly 40, 000, 000 deaths occur per year due to CVD.	Introduces the topic	Listening
2.	state the meaning of cardiovascular diseases	**MEANING OF CARDIOVASCULAR DISEASES:** Cardiovascular disease (CVD) is a term used to describe various conditions that affect the structure and functions of the heart and blood vessels.	Explains the meaning of CVD and where it can occur.	Listens and clears doubts.
3.	list the common cardiovascular diseases	**COMMON CARDIOVASCULAR DISEASES:** 1. **Hypertension** – it refers to elevated blood pressure (>140/90 mm of Hg). Normal blood pressure is 120/80 mm of Hg 2. **Heart Failure** – it occurs when the heart muscle can't pump effectively enough to meet the body's needs. 3. **Coronary Artery Disease** – narrowing or obstruction of vessels that supply blood to the heart, which in the long run can lead to death of the heart tissues(Myocardial Infarction) by lack of oxygenated		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		blood flow. 4. **Peripheral Vascular Disease (PVD)** – slow and progressive disease involving the blood vessels outside heart and brain. Organs supplied by these blood vessels such as kidneys, intestines, etc may not receive adequate blood flow for ordinary function, however, the legs and feet are most commonly affected.		
4.	specify the risk factors for cardiovascular diseases	**RISK FACTORS:** They can be divided into ❖ Non-modifiable risk factors ❖ Modifiable risk factors **NON-MODIFIABLE RISK FACTORS** **Age:** As age advances, fibrotic changes in walls, thickening and stiffening of left ventricle, hardening of the valves in the heart. Incidence of heart disease is high after 65 years. Chest pain & heart attack however can occur in a person's 30's and even in one's 20's. At older ages, women who have heart attacks are twice likely as men to die of heart attack. **Gender:** Men are at greater risk at a younger age than women in developing CVD due to protective hormones oestrogen and progesterone but after 65 years both are at equal risk. Women, who smoke, take oral contraceptives, and during post menopausal period have an increased risk of getting CVD.	List-out and explains how the risk factors affects the cardio vascular system.	Listens and clears doubts.

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		Heredity / Family History: Patients with familial hypercholesterolemia have high serum cholesterol levels and are at risk for developing atherosclerosis (fat deposits in the blood vessels). An individual is at high risk if he has first degree male relative with CVD before age 55 or a female first degree relative with CVD before age 65. **History of Preeclampsia:** A disorder of pregnancy that is characterized by high blood pressure accompanied by swelling in the feet, legs & hands and increased protein in the urine. Women with a history of preeclampsia face double the risk of stroke, heart disease and dangerous clotting in their veins, 5-15 years after pregnancy. **MODIFIABLE RISK FACTORS:** **Smoking:** Nicotine constricts arteries and causes arterial wall damage, which promotes formation of atherosclerotic plaque. Smoking increases the risk of heart disease by 2-4 times. **Dyslipidemia:** It refers to abnormal lipoprotein levels in the blood. **There are three types:** **1. LDL –** considered the 'bad cholesterol' because it carries cholesterol into tissues.		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		2. HDL - considered the 'good cholesterol' because it removes the cholesterol from tissues and returns it to the liver. Therefore the risk of developing CVD increases when an individual has increased LDL levels, decreased HDL levels and abnormal lipid metabolism. **3. Triglycerides** are lipids produced by the liver, they are also found in food. Elevated Triglycerides levels increase the risk of CVD. Factors that contribute to it include obesity, smoking and excessive alcohol consumption. **Diabetes Mellitus –** High blood sugar (> 200 mg/dl) damages and weakens blood vessels causing them to narrow. Adults with diabetes are two to four times more likely to have heart disease or a stroke than adults without diabetes. **Obesity:** It is defined as body mass index of 30 kg/m^2 or greater. It develops as a result of dietary habits and sedentary lifestyle. Individuals who have larger waist measurement than hip measurement are at greater risk for developing CVD. Adults with BMI between 25 & 28.9 have 2 times greater risk of developing heart disease and for those with BMI more than 29, the risk is nearly quadrupled. **Sedentary Lifestyle –** It is a type of lifestyle with no or irregular physical activity. Individuals with sedentary lifestyles are more likely to be overweight or obese & they have 30-50% greater risk of developing high blood pressure. It ranks similarly to cigarette smoking high and elevated cholesterol.		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		Stress - In humans, stress typically describes a negative condition or a positive condition that can have an impact on a person's mental and physical well being. Living a stressful life can cause people to adopt poor habits like smoking and eating badly, which in turn are risk factors for CVD, but being stressed itself can alter the way body behaves and this can bring about changes to the blood and nervous system, which can have a negative effect on the health of your heart. Studies show that acute stress triggers reduced blood flow to the heart, promotes your heart to beat regularly and increases the likelihood of your blood clotting. All of these can trigger the treatment of CVD. If you already have atherosclerosis and become acutely stressed you may experience chest pain caused by the arteries of your heart contracting and reducing the blood flow. When experienced over an extended period of time, all these effects can cause damage to the lining of the blood vessels. This makes the blood vessels more susceptible to atherosclerosis. **Alcohol Consumption:** Drinking too much alcohol can raise level of triglycerides. It can also lead to high blood pressure, heart failure and an increased calorie intake; this can lead to obesity and a higher risk of developing diabetes.		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
5.	explain the pathophysiology of cardiovascular diseases	**PATHOPHYSIOLOGY OF CARDIOVASCULAR DISEASES:**  	Explains the process involved in the development of CVD.	Listens and clears doubts.

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		↓ Death of tissues ↓ Heart attack		
6.	enlist the signs and symptoms of cardiovascular diseases	**SIGNS AND SYMPTOMS:** Mostly asymptomatic/ without symptoms • Dyspnea/ Shortness of breath (SOB) • SOB on exertion, at night or during position change • Chest pain or pain in jaw, shoulder, neck, back or one or both arms • Fatigue and weakness • Cough • Fainting attacks • Palpitations • Leg pain • Blood pressure more than 140/90 mm of Hg	Lists out the signs and symptoms.	Listens and clears doubts.
7.	state the screening and diagnostic measures for Cardiovascular diseases	**SCREENING:** According to American Heart Association, The key to preventing CVD is managing your risk factors. The best way to find out is through screening tests during regular doctor visits.	States the screening and diagnostic measures for CVD	Listens and clears doubts

<table>
<tr><th>S.NO</th><th>CONTRIBUTORY OBJECTIVES</th><th>CONTENT</th><th>INVESTIGATOR'S ACTIVITY</th><th>LEARNER'S ACTIVITY</th></tr>
<tr><td></td><td></td><td>
Recommended Schedule for Screening Tests
<table>
<tr><th>Recommended Screenings</th><th>How Often?</th><th>Starting when?</th></tr>
<tr><td>Blood pressure</td><td>Each regular health care visit or atleast once in every 2 years if BP is less than 120/80 mm of Hg</td><td>Age 20</td></tr>
<tr><td>Cholesterol ("fasting lipoprotein profile" to measure total, HDL and LDL cholesterol, and triglycerides)</td><td>Every 4-6 years for normal-risk people, more often if any of you have elevated risk for heart disease and stroke.
Normal HDL - >40mg/dl
Normal triglycerides - <150mg/dl
Normal LDL - <100mg/dl</td><td>Age 20</td></tr>
<tr><td>Weight / Body Mass Index (BMI)</td><td>During your regular health care visit</td><td>Age 20</td></tr>
<tr><td>Waist circumference</td><td>As needed to help evaluate CVD risk. This is a</td><td>Age 20</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY

	supplemental measurement if your BMI is > than or equal to25 kg/m2	
Blood glucose test	Atleast every 3 years	Age <= 45
Discuss smoking, physical activity & diet	Each regular health care visit	Age 20

DIAGNOSIS:

Discuss with the health care provider regarding:

- ❖ The signs and symptoms
- ❖ Family history

Diagnostic procedures help in confirming the diagnosis of CVD

- ❖ Electrocardiography (ECG) – graphical representation of the heart's electrical activity
- ❖ Echocardiography – Uses echoes from sound waves to visualize intracardiac structures direction of blood flow
- ❖ Chest X-ray – Radiographic picture of the hearts and lungs
- ❖ Exercise testing (Stress) – Study of the heart's electrical activity and ischemic events during prescribed levels of exercise
- ❖ Scans – Ultrasound, Doppler ultrasound or Magnetic Resonance Imaging (MRI) to locate narrowed sections of blood vessels.

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
8.	mention the treatment of cardiovascular diseases	**Treatment:** The main goals for treatment of cardiovascular diseases are: • Halt the progression of disease • To lower the risk of heart attack **Treatment Might Include** • Early initiation of treatment for diabetes, hyperlipidemia (High blood cholesterol) • Revascularisation Procedure The goal of this procedure is to improve blood circulation, either by opening the narrowed or blocked section of the blood vessel. ➢ Angioplasty: for opening blood vessels to increase blood flow ➢ Surgical insertion of stent: a metal stent is implanted inside the narrowed blood vessel during an angioplasty. ➢ Atherectomy: cutting away of fatty obstruction with small scalpel.	Enumerates the treatment modalities under different categories	Listens, contributes and clears doubts.
9.	describe the ways to prevent developing cardiovascular disease	**Prevention or self help treatment:-** Lifestyle changes are important for prevention of CVD **Smoking Cessation** • Develop a strong desire to stop smoking • Change daily routine associated with smoking to reduce desire to smoke	Discusses with the at-risk clients, the various prevention modalities.	Listens, participates in discussion and clears doubts.

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		• Divert attention through hobbies • Substitute cigarettes with other things like chewing gum (Nicotine replacement therapy) • Avoid passive smoking or second hand smoke(breathing in other people's tobacco smoke) • Ask support from family member to quit smoking • Quitting smoking helps eliminate a major risk factor for disease progression and lowers the incidence of rest pain and need for amputation. It is very important for the prevention of heart attacks and strokes. **Diabetes Mellitus** • Follow the recommended diet • Choose high fibre slow release carbohydrates (brown rice, wheat bread, leafy greens, vegetables) • Avoid processed foods (baked foods, desserts) • Eat whole fruit instead of fruit juice (apples, pears, peaches, bananas, mangoes, papayas) • Avoid sugar sweetened drinks and concentrated sweets • Choose foods with healthy fats (olive oil, almonds, walnuts) • Have 3 meals and 1 or 2 snacks, don't skip breakfast • Reduce weight • Monitor blood glucose levels(fasting and post prandial) once in 3 times daily if on insulin, otherwise as informed by your physician • Go for regular follow up(once in 3 months) • Prediabetes poses an increased risk of developing diabetes,FBG-100-125 mg/dl)		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		Diet Control ❖ **Foods to be used liberally** • Ragi, maize, white and sprouted dhal. These are complex carbohydrates which are absorbed more slowly. • Foods containing high fibre like wheat, barley, guava, dhal, green leafy vegetables, these reduce cholesterol and sugar level in the blood by delaying the absorption of carbohydrates and fats. • Egg White • Fish (2-3 pieces 2-3 times a week) which is low in fat content • Vegetable oils like soya bean oil, rice bran oil & corn oil • Poly Uunsaturated Fatty Acids (PUFA) containing foods such as Walnuts, Sunflower Seeds, Unsalted Peanuts, Peanut Butter, Olive Oil, Seaweed, Sardines, Soybeans, Tuna, Salmon, Whole Grain Wheat • Onions and garlic should be included in regular diet, since it reduces blood cholesterol level and enhance clot dissolution • Fruits and vegetables 5 or more servings/day • Drink atleast 2-3 litres of water/day ❖ **Foods to be used moderately** • White milk and milk powder, butter milk and skimmed milk. • Fruits like apple (1 small), water melon (1/4 small)		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		pomegranate (1 small), green grapes if diabetic ❖ **Foods to be avoided** • Sweets, sugars, honey, jam, cakes, cream biscuits, soft drinks, sweetened juices, chocolates, ice creams. These are simple sugars that are rapidly absorbed into the blood stream • Fried vegetables, chips, cheese, butter, ghee, milk cream, egg yolk and all types of meat, coconut oil, vanaspati and deep fried foods, these are high in fat content. • Pickles, pappads, salt biscuits have excessive salt which can increase blood pressure • Avoid root vegetables such as carrot, potato, beetroot, sweet potato, yam, tapioca as they are rich in starch content. • Foods prepared with maida like white bread, biscuits, parotta **Exercise:** **AHA Recommendation** **For Overall Cardiovascular Health:** • At least **30 minutes of moderate-intensity** aerobic activity at least **5 days per week for a total of 150 minutes** **OR** • At least **25 minutes of vigorous** aerobic activity at least **3 days per week for a total of 75 minutes**; or a combination of moderate- and vigorous-intensity		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		aerobic activity **AND** • **Moderate- to high-intensity muscle-strengthening** activity at least **2 days per week** for additional health benefits. **For Lowering Blood Pressure and Cholesterol** • An average **40 minutes of moderate- to vigorous-intensity** aerobic activity **3 or 4 times per week** • Aerobic exercises include running/jogging, swimming, cycling, and walking, climbing stairs, etc. It improves efficiency of the heart. • Avoid strenuous activities and exercises like weight lifting **DO's:** 1. fit in fitness 2. warm up and cool down 3. start off at a moderate intensity 4. stretch 5. consult a qualified trainer 6. watch what you eat 7. rest adequately 8. think positive 9. work out everyday 10. increase exercise level gradually **DONT'S** 1. get bored	s	

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		2. over-exercise 3. forget to breathe 4. dehydrate yourself 5. just think skinny 6. lead a sedentary life 7. neglect cardio training 8. skimp on shoes 9. get hung up on heart rate 10. be a weekend warrior **Stress Management:-** • Increase awareness of behaviours that are unfavourable to health eg:- nail biting • Alter patterns that lead to risk and rushing • Set realistic goals for self (eg: to do list) • Reassess priorities in light of health needs • Learn effective coping strategies(relaxation, listen to music and be positive) • Meditate atleast 20 min/day • Adequate rest and sleep(6-8 hours/day) • A de-stressing program atleast once a month. (eg: family outing) **4 A's of stress management:** • Avoid the stress • Alter the stress • Accept the stress • Adapt to the stress		

S.NO	CONTRIBUTORY OBJECTIVES	CONTENT	INVESTIGATOR'S ACTIVITY	LEARNER'S ACTIVITY
		Alcohol Cessation • Persons with a family or personal history of alcoholism, hypertriglyceridemia, pancreatitis, liver disease, certain blood disorder, heart failure, uncontrolled hypertension as well as pregnant women and persons on medications that interact with alcohol should not consume any alcohol. • If no contraindication, limit alcohol intake to one or two ounces per day • Never consume alcohol while driving		
10.	specify the consequences of not modifying lifestyle	**Consequences:** • Heart diseases such as hypertension, heart failure, coronary artery disease, peripheral vascular diseases • Heart attack • Increased health care utilisation • Increased Health Care cost • Increased absenteeism from work • Self reported poor health • Disability • Decreased quality of life • Decreased standard of living • Sudden cardiac death	Mentions the consequences of not modifying lifestyle	Listens
11.	to conclude the topic	**Conclusion:** The above discussed information is important in preventing cardiovascular diseases, so these preventive measures ought to be followed to lead a joyous life.	Concludes about the topic	Listens

APPENDIX – K

Plagiarism Detector - Originality Report

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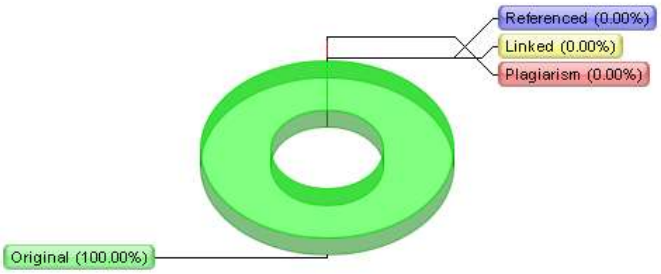
Generation Time and Date:	07/08/2015 6:16:16 PM
Document Name:	Plagiarism Sharon.docx
Document Location:	C:\Documents and Settings\admin\Desktop\Plagiarism Sharon.docx
Document Words Count:	30857
Check time [hs:ms:ss]:	00:03:12

Plagiarism Detection Chart:



Referenced 0% / Linked 0%

Original - 100% / 0% - Plagiarism

Processed Resources List: **Processed Ok: 0 Failed: 0**

Plagiarism\Reference\Original Distribution Graph:

APPENDIX – L

M.Sc (N) DISSERTATION EXECUTION PLAN

S.NO	ACADEMIC CALENDER MONTHS	OCTOBER 2013 to SEPTEMBER 2014												OCTOBER 2014 to SEPTEMBER 2015											
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
A	**Conceptual phase**																								
1	Problem identification																								
2	Literature review																								
3	Clinical fieldwork																								
4	Theoretical framework																								
5	Hypothesis formulation																								
B	**Design & planning phase**																								
6	Research design																								
7	Intervention protocol																								
8	Population specification																								
9	Sampling plan																								
10	Data collection plan																								
11	Ethics procedure																								
12	Finalization of plans																								
C	**Empirical phase**																								
13	Data collection																								
14	Data preparation																								
D	**Analytical phase**																								
15	Data analysis																								
16	Interpretation of results																								
E	**Dissemination phase**																								
17	Presentation or report																								
18	Utilization of findings																								
	Calendar months	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9

APPENDIX – M

PHOTOGRAPHS